CDP-CX70ES/CX255

SERVICE MANUAL

US Model
Canadian Model

Photo : CDP-CX255

Model Name Using Similar Mechanism	CDP-CX250
CD Mechanism Type	CDM-40
Base Unit Type	KSM-213BKN/M-N
Optical Pick-up Type	KSS-213B/S-N

SPECIFICATIONS

Compact disc player

Laser
Semiconductor laser (λ = 780 nm)
Emission duration: continuous

Laser output
Max 44.6 µW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up block with 7 mm aperture.

Frequency response
20 Hz to 20 kHz ±0.5 dB

Signal-to-noise ratio
CDP-CX255: More than 107 dB
CDP-CX70ES: More than 110 dB

Dynamic range
More than 98 dB

Harmonic distortion
CDP-CX255: Less than 0.0035%
CDP-CX70ES: Less than 0.0030%

Channel separation
More than 100 dB

Outputs

	Jack type	Maximum output level	Load impedance
LINE OUT	Phono jacks	2 V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	−18 dBm	Wave length: 660 nm

General

Power requirements
120 V AC, 60 Hz

Power consumption
14 W

Dimensions (approx.) (w/h/d)
When the front cover is closed
430 × 200 × 480 mm (17 × 7 7/8 × 19 in.) incl. projecting parts
When the front cover is open
430 × 200 × 600 mm (17 × 7 7/8 × 23 5/8 in.) incl. projecting parts

Mass (approx.)
9.0 kg (19 lbs 14 oz)

COMPACT DISC PLAYER

MICROFILM

SONY®

TABLE OF CONTENTS

1. SERVICING NOTE 3

2. GENERAL 6

3. DISASSEMBLY
3-1. Front Panel Assembly 14
3-2. Back Panel 14
3-3. Table Assembly 15
3-4. Mechanism Deck 16
3-5. Base Unit 16

4. TEST MODE 17

5. MESHANICAL ADJUSTMENTS 20

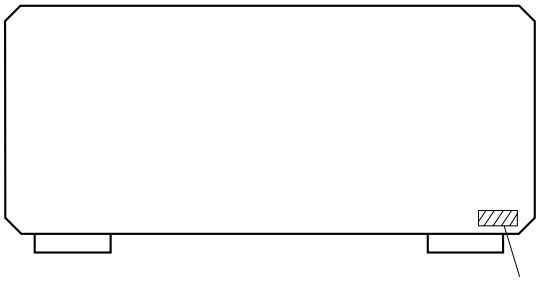
6. ELECTRICAL ADJUSTMENTS 26

7. DIAGRAMS
7-1. Circuit Boards Location 29
7-2. IC Pin Functions 31
7-3. Block Diagrams
• BD Section 33
• Main Section 35
7-4. Printed Wiring Board — BD Section — 37
7-5. Schematic Diagram — BD Section — 39
7-6. Schematic Diagram — Main Section (1/2) — 41
Schematic Diagram — Main Section (2/2) — 43
7-7. Printed Wiring Board — Main Section — 45
7-8. Printed Wiring Board — Sensor Section — 47
7-9. Schematic Diagram — Sensor Section — 48
7-10. Printed Wiring Board — Jack Section — 49
7-11. Schematic Diagram — Jack Section — 51
7-12. Printed Wiring Board — Display Section — 53
7-13. Schematic Diagram — Display Section — 55
7-14. IC Block Diagrams 57

8. EXPLODED VIEWS
8-1. Case Section 62
8-2. Disc table Section 63
8-3. Front panel Section 64
8-4. Mechanism Section-1 (CDM-40) 65
8-5. Mechanism Section-2 (CDM-40) 66
8-6. Base Unit Section-1 (KSM-213BKN/M-N) 67
8-7. Base Unit Section-2 (KSM-213BKN/M-N) 68

9. ELECTRICAL PARTS LIST 69

MODEL IDENTIFICATION
— BACK PANEL —



PARTS No.	MODEL
4-982-813-7□	CX255 : US model
4-982-813-8□	CX255 : Canadian model
4-983-366-5□	CX70ES : US model
4-983-366-6□	CX70ES : Canadian model

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

For the customers in Canada

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

SECTION 1
SERVICING NOTE

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth Ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

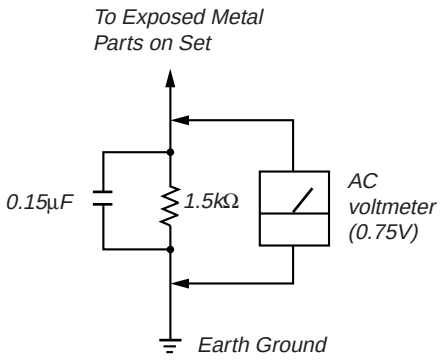


Fig. A. Using an AC voltmeter to check AC leakage.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the "S curve check" in "CD section adjustment" and check that the S curve waveform is output repeatedly.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

CD-TEXT TEST DISC

This unit is able to display the test data (character information) written in the CD on its fluorescent indicator tube.
The CD-TEXT TEST DISC (TGCS-313:4-989-366-01) is used for checking the display.
To check, perform the following procedure.

Checking Method:

1. Turn ON the power, set the disc on the disc table with the side labeled as ‘’test disc” as the right side, close the front cover, and chuck the disc.
2. Press the [▷] button and play back the disc.
3. The following will be displayed on the fluorescent indicator tube.
   Display : 1kHz/0 dB/ L&R
4. Press the [⏮] and [⏭] buttons to switch the track. The text data of each track will be displayed.
   For details of the displayed contents for each track, refer to “Table 1 : CD-TEXT TEST DISC TEXT Data Contents” and “Table 2 : CD-TEXT TEST DISC Recorded Contents and Display”.

Restrictions in CD-TEXT Display

In this unit, some special characters will not be displayed properly. These will be displayed as a space or a character resembling it. For details, refer to “Table 2 : CD-TEXT DISC Recorded Contents and Display”.

Table 1 : CD-TEXT TEST DISC TEXT Data Contents (TRACKS No. 1 to 41:Normal Characters)

TRACK No.	Displayed Contents	TRACK No.	Displayed Contents
1	1kHz/0dB/L&R	22	1kHz/-90dB/L&R
2	20Hz/0dB/L&R	23	Infinity Zero w/o emphasis//L&R
3	40Hz/0dB/L&R	24	Infinity Zero with emphasis//L&R
4	100Hz/0dB/L&R	25	400Hz+7kHz(4:1)/0dB/L&R
5	200Hz/0dB/L&R	26	400Hz+7kHz(4:1)/-10dB/L&R
6	500Hz/0dB/L&R	27	19kHz+20kHz(1:1)/0dB/L&R
7	1kHz/0dB/L&R	28	19kHz+20kHz(1:1)/-10dB/L&R
8	5kHz/0dB/L&R	29	100Hz/0dB/L*
9	7kHz/0dB/L&R	30	1kHz/0dB/L*
10	10kHz/0dB/L&R	31	10kHz/0dB/L*
11	16kHz/0dB/L&R	32	20kHz/0dB/L*
12	18kHz/0dB/L&R	33	100Hz/0dB/R*
13	20kHz/0dB/L&R	34	1kHz/0dB/R*
14	1kHz/0dB/L&R	35	10kHz/0dB/R*
15	1kHz/-1dB/L&R	36	20kHz/0dB/R*
16	1kHz/-3dB/L&R	37	100Hz Squer Wave//L&R
17	1kHz/-6dB/L&R	38	1kHz Squer Wave//L&R
18	1kHz/-10dB/L&R	39	1kHz w/emphasis/-0.37dB/L&R
19	1kHz/-20dB/L&R	40	5kHz w/emphasis/-4.53dB/L&R
20	1kHz/-60dB/L&R	41	16kHz w/emphasis/-9.04dB/L&R
21	1kHz/-80dB/L&R		

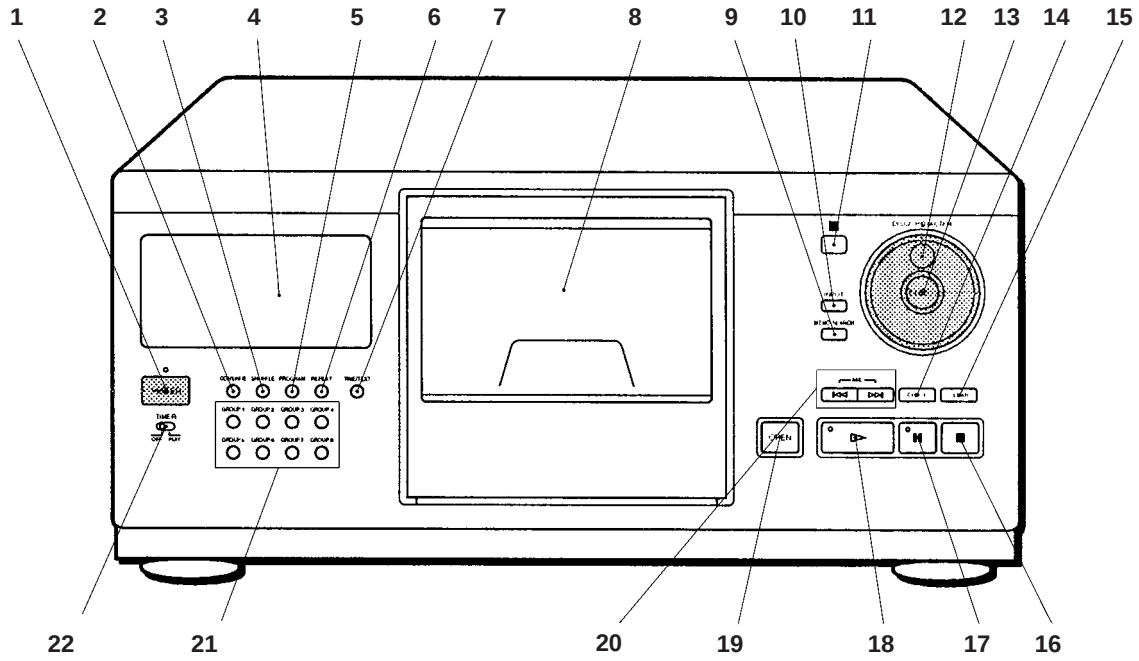
NOTE : The contents of Track No. 1 to 41 are the same as those of the current TEST DISC-their titles are displayed.

Table 2: CD-TEXT TEST DISC Recorded Contents and Display
(In this unit, some special characters cannot be displayed. This is no a fault.)

TRACK No.	Recorded contents	Display
42	! " # $ % & ´ (21h to 27h)1kHz 0dB L&R	← All the same
43	( ) * + , – . / (28h to 2Fh)	← All the same
44	0 1 2 3 4 5 6 7 (30h to 37Fh)	← All the same
45	8 9 : ; < = > ? (38h to 3Fh)	← All the same
46	@ A B C D E F G (40h to 47Fh)	← All the same
47	H I J K L M N O (48h to 4Fh)	← All the same
48	P Q R S T U V W (50h to 57Fh)	← All the same
49	X Y Z [¥] ^ _ (58h to 5Fh)	X Y Z [\ ] ^ _ (58····
50	` a b c d e f g (60h to 57Fh)	← All the same
51	h i j k l m n o (68h to 6Fh)	← All the same
52	p q r s t u v w (70h to 77Fh)	← All the same
53	x y z { l } ~ ▉ (78h to 7Fh)	x y z { ¦ } ~ (78···· ▉ is not displayed
54	▯ ¡ ¢ £ ¤ ¥ ¦ § (A0h to A7h) 8859-1	(A0····All not displayed
55	♪ © ª « ¬ ® ¯ (A8h to AFh)	(A8····All not displayed
56	° ± ² ³ ´ µ ¶ • (B0h to B7h)	(B0····All not displayed
57	† ¹ º » ¼ ½ ¾ ¿ (B8h to BFh)	(B8····All not displayed
58	À Á Â Ã Ä Å Æ Ç (C0h to C7Fh)	A A A A A A C (C0····Æ is not displayed
59	È É Ê Ë Ì Í Î Ï (C8h to CFh)	E E E E I I I I (C8
60	Ð Ñ Ò Ó Ô Õ Ö × (C0h to C7Fh)	D N O O O O O (D0···· × is not displayed
61	Ø Ù Ú Û Ü Ý Þ ß (D8h to DFh)	O U U U U Y (D8···· Þ ß are not displayed
62	à á â ã ä å æ ç (E0h to E7Fh)	a a a a a a c (E0····æ is not displayed
63	è é ê ë ì í î ï (E8h to FFh)	e e e e i i i i (E8····
64	ð ñ ò ó ô õ ö ÷ (F0h to F7Fh)	d n o o o o o (F0····÷ is not displayed
65	ø ù ú û ü ý þ ÿ (F8h to FFFh)	o u u u u y y (F8···· þ is not displayed
66	No.66	← All the same
67	No.67	← All the same
to	to	to
99	No.99	← All the same

SECTION 2
GENERAL

Location of Parts and Controls

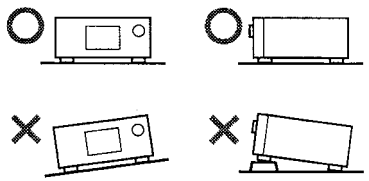


1 POWER switch
2 CONTINUE button
3 SHUFFLE button
4 Display window
5 PROGRAM button
6 REPEAT button
7 TIME/TEXT button
8 Front cover
9 MEMO SEARCH button
10 INPUT button
11 Remote sensor
12 JOG dial
13 ENTER button
14 CHECK button
15 CLEAR button
16 ■ button
17 ❚❚ button
18 ▷ button
19 OPEN button
20 ⏮/⏭ button
21 GROUP 1-8 button
22 TIMER switch

Getting Started

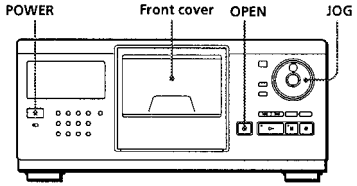
Note on placement

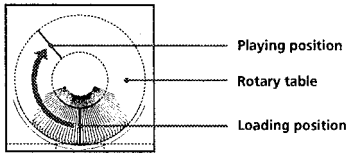
Be sure to place the player on a horizontal place.
If the player is slanted, it may cause malfunction or damage the player.



Inserting CDs

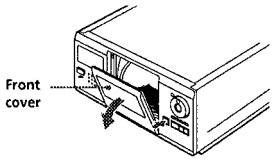
You can insert up to 200 discs into this player.



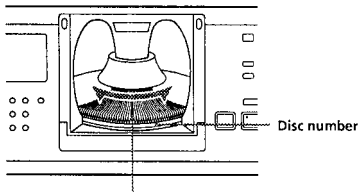


1 Press POWER to turn on the player.

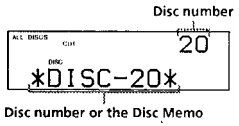
2 Press OPEN.



3 Turn the JOG dial until you find the disc slot where you want to insert a disc, while checking the disc number (written beside every five slots and also indicated in the display).



The disc number at the loading position appears in the display.* If the disc has the Disc Memo (see page 17), the Disc Memo appears instead of the disc number. As you turn the JOG dial, the disc number or the Disc Memo changes.

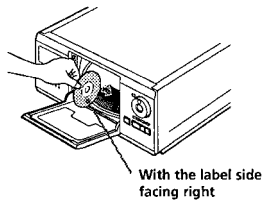


* If you have already inserted discs, the disc number at the playing position appears. When you turn the JOG dial, the displayed disc number changes to the one at the loading position.

4 Insert a disc with the label side facing right.

Notes

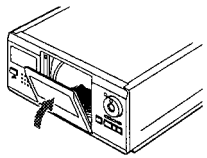
- Make sure you have inserted the disc into each slot at a right angle to the rotary table. If the disc is not put in straight, it may damage the player or the disc.
- Make sure the rotary table comes to a complete stop before inserting or removing discs.



After inserting the disc, you can input the original disc titles instead of the disc numbers (see "Labeling Discs" on page 17) to locate it easily when you start playing.

5 Repeat Steps 3 and 4 to insert more discs.

6 Close the front cover by pressing the right edge of the cover until it clicks.



The rotary table turns and the disc slot at the loading position is set to the playing position. Always close the front cover except when you insert or remove discs.

The supplied CD booklet holders help you locate a disc

You can store up to 200 CD booklets. Insert a booklet and stick the number label on the film of a pocket and the booklet so that you can locate the disc easily.

Notes

- When you insert an 8 cm (3-inch) CD, be sure to attach a Sony CSA-8 adaptor (not supplied) to the disc.
  Do not insert an empty 8 cm (3-inch) CD adaptor (CSA-8). It may damage the player.
- **Do not attach anything such as seals or sleeves to CDs. It may damage the player or the disc.**
- If you drop a disc into the player and the CD won't go into the slot correctly, consult your nearest Sony dealer.
- When transporting the player, remove all discs from the player.

Removing CDs

After following Steps 1 to 3 of "Inserting CDs" on page 6, remove the discs. Then close the front cover.

Note

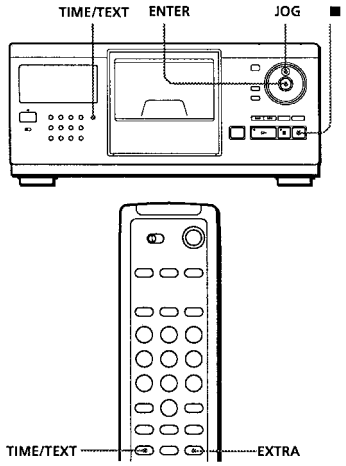
The disc being played does not come to the loading position if you open the front cover during playback. (The disc number flashes in the display.)
If you want to remove the disc being played, press ENTER in the center of the JOG dial after opening the front cover. The disc comes to the loading position. Remove the disc after the rotary table comes to a complete stop.

This section is extracted from instruction manual.

Playing CDs

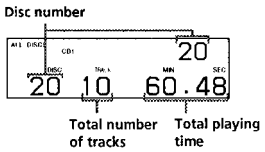
Using the Display

You can check information about the disc using the display.



Checking the total number and playing time of the tracks

Select the disc you want to check, and press ENTER in the Continuous Play mode. As the player starts play automatically, press ■ to stop, and then TIME/TEXT. The display shows the current disc number, total number of tracks and total playing time of the disc.

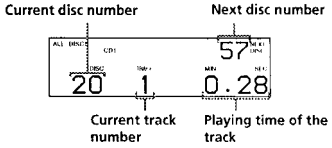


When you want to check another disc

Press DISC SKIP on the remote in the stop mode to select the disc you want to check. The total number of tracks and the total playing time of the selected disc appear for a while.

Display information while playing a disc

While playing a disc, the display shows the current disc number, track number, playing time of the track and the next disc number.



Checking the information of CD-TEXT discs

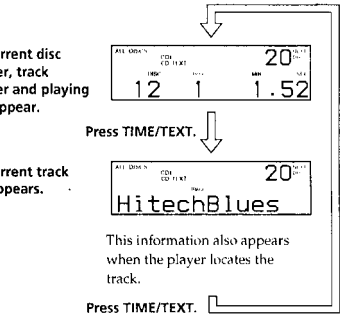
CD-TEXT discs have information, such as the disc titles or artist names, memorized in a blank space on the discs where there is no information on normal discs. The display shows the CD-TEXT information of the disc so that you can check the current disc title, track title and artist name. When you select a CD-TEXT disc, the "CD-TEXT" indication lights up in the display.

Display information before you start playing

The display shows the disc title. When you press TIME/TEXT, the artist name scrolls in the display. If you press TIME/TEXT again, the display shows the current disc number, total number of tracks and total playing time of the disc. The display shows the disc title again after a while.

Display information while playing a disc

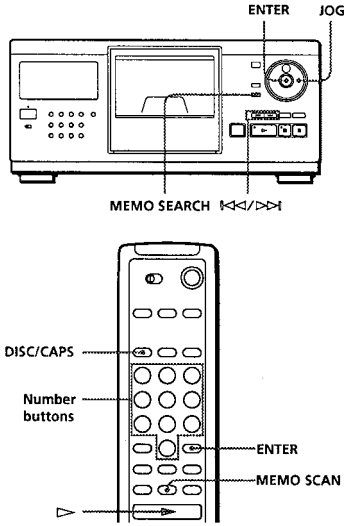
Each time you press TIME/TEXT, the display shows the information as shown below.



To play disc highlights

Some CD-TEXT discs have a feature to play only the highlights of the discs.
Press EXTRA to start playing disc highlights in the stop mode. "▷" flashes while playing disc highlights.
If you press EXTRA while selecting discs without this feature, "NO EXTRA" appears in the display.

Locating a Specific Disc



Selecting a disc on the player

Turn the JOG dial until the disc number or Disc Memo (see page 17) you want appears in the display. Press ENTER to start play.

Selecting a disc directly using the remote

1 Press DISC/CAPS.

2 Press the number button of the disc.
Example: To enter number 35
Press 3, then 5.
To enter number 100
Press 1, then 0 twice.

3 Press ENTER to start play.

Locating a disc by scanning each Disc Memo (Memo Scan)

You can locate a disc you want to play quickly by scanning the Disc Memos (see page 17) in the display and start playing.
Note that you cannot use this function in the ALL DISCS Shuffle Play mode.

1 Press MEMO SCAN.
"MEMO SCAN" appears in the display, and the Disc Memos scroll in the display.

2 Press ▷ when the Disc Memo of the disc you want to play appears.
The disc is set to the playing position, and the player starts playing.
In Program Play mode, the disc will be added to the end of the program if you press ENTER instead of ▷.

Note

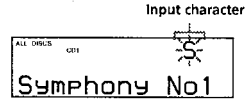
If "NO ENTRY" appears in the display, no disc has been labeled with the Disc Memo. Try the Memo Scan function again after labeling the discs.

Locating a disc by searching a specific Disc Memo (Memo Search)

You can search and locate a disc you want by inputting the first character used in the Disc Memo (see page 17).

1 Press MEMO SEARCH.
"MEMO SEARCH" appears in the display.

2 Press I◁◁/▷▷I repeatedly to input the first character.



Each time you press I◁◁/▷▷I, the characters appear in the following order.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9

If "NOT FOUND" appears in the display while inputting the first character with the I◁◁/▷▷I buttons, no disc has been labeled using the input character.

(Continued)

Playing CDs

Notes

- When searching input characters, blanks and symbols before the first character in the Disc Memo are ignored.
- When searching input characters, upper and lower cases cannot be differentiated.

3 Turn the JOG dial to find the disc you want.
As you turn the JOG dial, the Disc Memos starting with the input character appear in the display.

4 Press ENTER to select the disc.
In Program Play mode, the disc will be added to the end of the program.

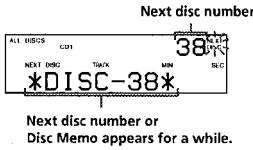
To cancel Memo Search
Press MEMO SEARCH again.

If there is no more Disc Memo starting with the input character in Step 3
The input character changes to the next one when you turn the JOG dial.

Specifying the Next Disc to Play

You can specify the next disc to play while playing a disc in Continuous or 1 DISC Shuffle Play mode.

While playing a disc, turn the JOG dial until the disc number or Disc Memo (see page 17) you want appears in the display.

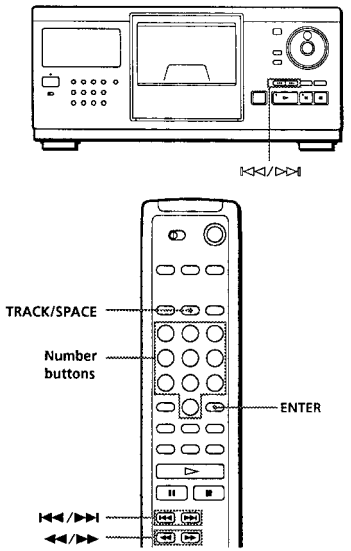


After the current disc is played, the next disc you have specified starts playing.
If you want to skip to the next disc right away, press ENTER while playing the current disc.

To cancel the disc you have specified
Press CONTINUE twice.

Locating a Specific Track or a Point in a Track

You can quickly locate any track while playing a disc using the ⏮/⏭ (AMS: Automatic Music Sensor) buttons or number buttons on the remote. You can also locate a specific point in a track while playing a disc.

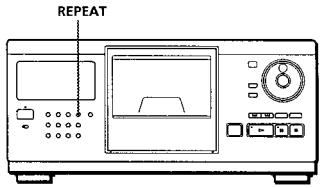


To locate	Press
the next or succeeding tracks	⏭ repeatedly until you find the track
the current or preceding tracks	⏮ repeatedly until you find the track
a specific track directly	TRACK/SPACE, the number button of the track, and then ENTER. When you locate a track with a number over 10, press the 10's digit first, then the 1's digit.
a point in a track while monitoring the sound	▶▶ (forward) or ◀◀ (backward) and hold down until you find the point
a point in a track quickly by observing the display	▶▶ (forward) or ◀◀ (backward) and hold down until you find the point during pause. You will not hear the sound during the operation.

Note
If "OVER" appears in the display, the disc has reached the end while you were pressing ▶▶. Press ◀◀ or ⏮ to go back.

Playing Repeatedly

You can play discs/tracks repeatedly in any play mode.



Press REPEAT while playing a disc.
"REPEAT" appears in the display. The player repeats the discs/tracks as follows:

When the disc is played in	The player repeats
ALL DISCS Continuous Play (page 8)	All tracks on all discs
1 DISC Continuous Play (page 8)	All tracks on the current disc
ALL DISCS Shuffle Play (page 13)	All tracks on all discs in random order
1 DISC Shuffle Play (page 13)	All tracks on the current disc in random order
Program Play (page 14)	The same program

To cancel Repeat Play
Press REPEAT repeatedly until "REPEAT OFF" appears in the display.

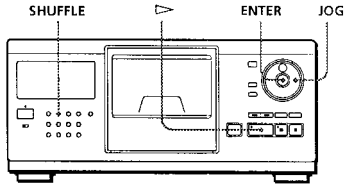
Repeating the current track

You can repeat only the current track.

While the track you want is being played, press REPEAT repeatedly until "REPEAT 1" appears in the display.

Playing in Random Order (Shuffle Play)

You can have the player "shuffle" the tracks and play in random order. The player shuffles all the tracks on all discs or on the disc you specified.



1 Press SHUFFLE to select ALL DISCS or 1 DISC Shuffle Play mode.
Each time you press SHUFFLE, "ALL DISCS" or "1 DISC" appears in the display.

When you select	The player plays
ALL DISCS	All tracks on all discs in random order
1 DISC	All tracks on the specific disc in random order

2 When you want to specify the disc for 1 DISC Shuffle Play, turn the JOG dial until the disc number or Disc Memo (see page 17) you want appears in the display.

3 Press ENTER or ▷.
ALL DISCS or 1 DISC Shuffle Play starts.
"🔀" appears in the display while the player is "shuffling" the discs or the tracks.

To cancel Shuffle Play
Press CONTINUE.

You can start Shuffle Play while playing
Press SHUFFLE, and Shuffle Play starts from the current track.

You can directly select a disc for 1 DISC Shuffle Play
See "Selecting a disc directly using the remote" on page 11.

You can go to the next disc during 1 DISC Shuffle Play
Press DISC SKIP +.

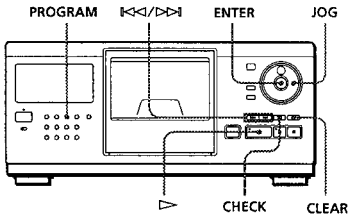
You can specify the next disc to play during 1 DISC Shuffle Play
Turn the JOG dial to specify the next disc. After all the tracks on the current disc are played in random order, the next disc starts playing. If you want to skip to the next disc right away, press ENTER while playing the current disc.

Notes
- You cannot specify the next disc to play during ALL DISCS Shuffle Play.
- Even if you press ■ or turn off the player during ALL DISCS Shuffle Play, the player remembers which discs/tracks were played and which were not. Therefore, if you want to start ALL DISCS Shuffle Play again from the beginning, be sure to repeat the procedure from Step 1.

Creating Your Own Program (Program Play)

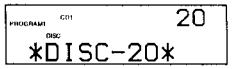
You can arrange the order of the tracks and/or discs to create three different programs and programs are stored automatically. A program can contain up to 32 "steps" — one "step" may contain a track or a whole disc.
You can make programs using the controls on the remote as well as ones on the player. However, the programming procedures are different.

Creating a program on the player

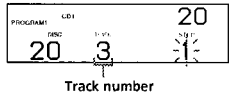


1 Press PROGRAM until the program number you want (PROGRAM 1, 2 or 3) appears in the display. If a program is already stored in the selected program number, the last step of the program appears in the display. When you want to erase the whole program, hold down CLEAR until "ALL CLEAR" appears in the display (see page 16).

2 Turn the JOG dial until the disc number you want appears in the display.

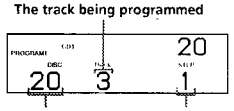


3 To program a whole disc, skip this step. Press I◁◁/▷▷I until the track number you want appears in the display.



Track number

4 Press ENTER or PROGRAM.



5 To program other discs/tracks, do the following:

To program	Repeat Steps
Other discs	2 and 4
Other tracks on the same disc	3 and 4
Other tracks on other discs	2 to 4

6 Press ▷ to start Program Play.

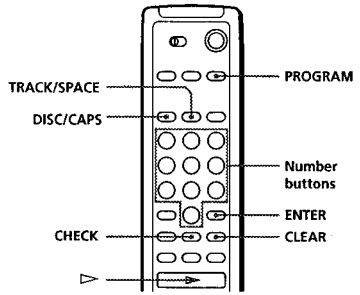
To cancel Program Play
Press CONTINUE.

The programs remain even after Program Play ends
When you press ▷, you can play the same program again.

When you press PROGRAM during Continuous or Shuffle Play
The program will be played after the current track.

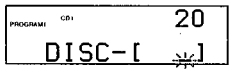
The programs remain until you erase them
If you replace discs, the programmed disc and track numbers remain. So, the player plays only the existing disc and track numbers. However, the disc and track numbers that are not found in the player or on the disc are deleted from the program, and the rest of the program is played in the programmed order.

Creating a program using the remote

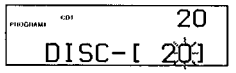


1 Press PROGRAM until the program number you want (PROGRAM 1, 2 or 3) appears in the display.

2 Press DISC/CAPS.

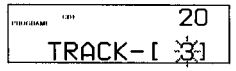


3 Press the number button of the disc.

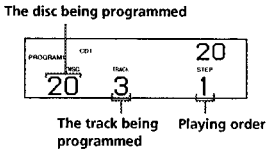


4 To program a whole disc, skip this step and go to Step 6. Press TRACK/SPACE.

5 Press the number button of the track.



6 Press ENTER.



7 To program other discs/tracks, do the following:

To program	Repeat Steps
Other discs	2, 3 and 6
Other tracks on the same disc	4 to 6
Other tracks on other discs	2 to 6

8 Press ▷ to start Program Play.

To cancel Program Play
Press CONTINUE.

Checking the programmed order

You can check your program before or after you start playing.

Press CHECK.
Each time you press this button, the display shows the disc and track number of each step in the programmed order. (When a whole disc is programmed as one step, "ALL" appears instead of the track number.) After the last step in the program, the display shows "END" and returns to the original display.

Changing the programmed order

You can change your program before you start playing.

To	You need to
Erase a track or disc	Press CHECK until the track or disc you do not want appears in the display, then press CLEAR
Erase the last track or disc in the program	Press CLEAR. Each time you press the button, the last track or disc will be cleared.
Add tracks or discs to the end of the program	Follow the programming procedure
Change the whole program completely	Hold down CLEAR until "ALL CLEAR" appears in the display to erase the whole program, then create a new program following the programming procedure

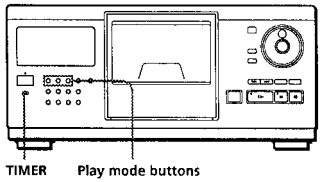
Erasing the programs stored in memory

1 Press PROGRAM repeatedly in the stop mode until the program number (PROGRAM 1, 2 or 3) you want to erase appears in the display.

2 Hold down CLEAR until "ALL CLEAR" appears in the display.

Playing Using a Timer

You can start playing a disc at any time you want by connecting a timer (not supplied). Please also refer to the instructions for the timer if you need help.



1 Press one of the play mode buttons to select the play mode you want.

2 Set TIMER on the player to PLAY.

3 Set the timer to the time you want.
The player turns off. When the set time comes, the player turns on and starts playing.

4 After you have used the timer, set TIMER on the player to OFF.

What You Can Do With the Custom Files

The player can store three types of information called "Custom Files" for each disc. Once you have stored Custom Files for a disc, the player automatically recalls what you have stored whenever you select the disc. Note that Custom Files will be erased if you do not use the player for about one month.

You can store this information:

When you use	You can
Disc Memo (page 17)	Label discs using up to 13 characters
Delete Bank (page 19)	Delete unwanted tracks and store only the tracks you want
Group File (page 20)	Group discs up to eight groups to locate them easily

Where are Custom Files stored?

Custom Files are stored not on the disc, but in the player's memory. It means you cannot use Custom Files when you play the disc on other players.

If you replace discs you have filed in the Custom Files

The Custom File information you have stored remains, since each Custom File information is assigned to each slot. Erase all Custom Files (Disc Memo, Delete Bank and Group File) of the old disc, and then file the new disc information in the Custom Files.

Erasing all Custom Files of all discs

Turn off the player. While holding down CLEAR, press POWER to turn on the player. "ALL ERASE" appears in the display, and all Custom Files will be erased.

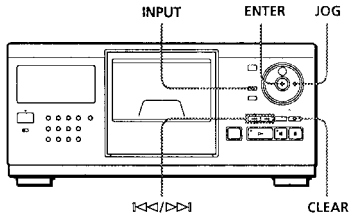
Labeling Discs (Disc Memo)

You can label discs using up to 13 characters and have the player display the Disc Memo each time you select the disc. The Disc Memo can be anything you like, such as a title, musician's name, category or date of purchase.

When you select a CD-TEXT disc
The disc title is stored as the Disc Memo automatically. If the disc title has more than 13 characters, the first 13 characters of the disc title are stored (see page 10).
When you replace a disc with a CD-TEXT disc, the disc title of the CD-TEXT disc is also stored automatically. Note that you cannot change the Disc Memo of the CD-TEXT disc.

You can label discs while the front cover is open

Labeling discs on the player



1 Turn the JOG dial until the disc number to which you want to assign a Disc Memo appears in the display.
When you label a disc with the front cover closed, the disc number of the disc at the playing position appears.
When you label a disc with the front cover open, the disc number at the loading position appears.

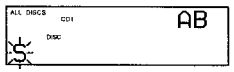
2 Press INPUT.

3 Turn the JOG dial until "DISC MEMO" appears in the display, and then press ENTER.
The flashing cursor (◀) appears.

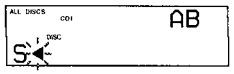
(Continued)

4 Turn the JOG dial until the character you want appears in the display.
The cursor disappears and the first space for the Disc Memo flashes.
As you turn the JOG dial clockwise, the characters appear in the following order. Turn the JOG dial counterclockwise to go back to the previous character.

(space) A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z 0 1 2 3 4 5 6 7 8 9 ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [¥] ^ _ \ { ¦ } ~



5 Press ENTER to select the character.
The selected character lights up, and the flashing cursor appears to indicate the next space to be input.



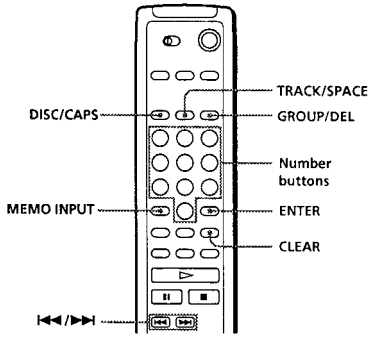
If you have made a mistake
Press CLEAR and begin again by inputting the correct characters.

6 Repeat Steps 4 and 5 to input more characters.

7 Press INPUT to store the Disc Memo.
The Disc Memo lights up in the display.

Repeat Steps 1 to 7 to assign Disc Memos to other discs.

Labeling discs using the remote



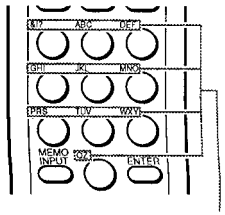
1 Press DISC/CAPS.

2 Press the number button of the disc you want to assign a Disc Memo, and then ENTER.

3 Press MEMO INPUT.
The flashing cursor (◀) appears.

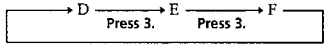
4 Press DISC/CAPS to find the letter type you want.
Each time you press the button, the letter type changes cyclically among capital letters (AB), small letters (ab) and numbers (12). The selected letter type appears in the upper right corner of the display.

5 Press the number button corresponding to the character you want (indicated beside each number button).
The cursor disappears and the first space for the Disc Memo flashes.
Each time you press the button, the character changes cyclically among the ones indicated beside the button.



Characters assigned to each number button

Example: To select the letter E
Press the number button 3 twice.



Press 3.

To insert a space, press TRACK/SPACE once.
To input a number, press DISC/CAPS twice in Step 4, then press the number button you want.
To input symbols, press the number button 1 repeatedly until the symbol you want appears in the display.

6 Press ENTER to select the character.
The selected character lights up, and the flashing cursor appears to indicate the next space to be input.
You can also go to the next space by pressing other number buttons.

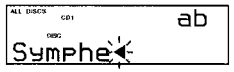
7 Repeat Steps 4 through 6 to input more characters.

8 Press MEMO INPUT to store the Disc Memo.
The Disc Memo lights up in the display.

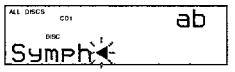
Repeat Steps 1 through 8 to assign Disc Memos to other discs.

If you have made a mistake while inputting the character

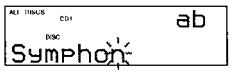
To correct the character which has been input
1 Press ⏮ or ⏭ until the cursor moves next to the incorrect character.



2 Press GROUP/DEL to delete the incorrect character.



3 Input the correct character.



To correct the character currently being input
1 Press GROUP/DEL to delete the incorrect character.
2 Input the correct character.

To insert a character between the input characters
Press ⏮ or ⏭ until the cursor moves next to the point you want to insert, and enter the character.

Erasing the Disc Memo

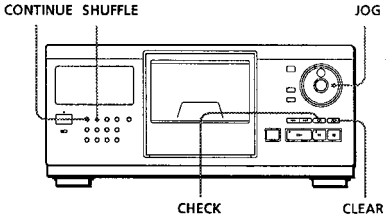
1 Follow Steps 1 through 3 in "Labeling discs on the player" on page 17 or "Labeling discs using the remote" on page 18 to select the Disc Memo you want to erase.

2 Press CLEAR.
The Disc Memo disappears.

3 Press INPUT.

Storing Specific Tracks (Delete Bank)

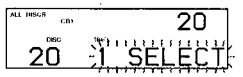
You can delete unwanted tracks and store only the tracks you want. When you select the disc containing a Delete Bank, you can play only the remaining tracks.



1 Press CONTINUE or SHUFFLE before you start playing.

2 Turn the JOG dial to select the disc.

3 Press CHECK repeatedly until the track you want to delete appears in the display.



(Continued)

4 Press CLEAR.
"DELETE FILE" appears, and "DELETE" flashes in the display.

If you want to recover the track, press CLEAR again.

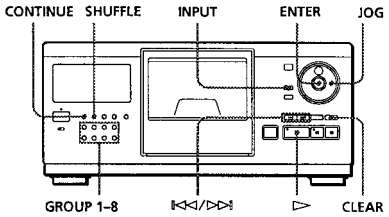
5 Repeat Steps 3 and 4 to delete more tracks.

You can recover all the tracks you have deleted
Hold down CLEAR until "ALL SELECT" appears in the display.

Note
The deleted tracks are skipped even in the Shuffle or Program Play mode (when the whole disc containing a Delete Bank is programmed as one step).

Grouping Discs (Group File)

You might find that too many discs make it hard to find the disc you want. This player has a feature that lets you classify discs into eight groups. One disc can be put into only one group.
Once you classify discs, you can enjoy Continuous, Shuffle or Repeat Play only within a certain group (Group Play).



Putting discs into groups

1 Press CONTINUE or SHUFFLE before you start playing.

2 Turn the JOG dial to select the disc which you want to put into a group.

3 Press INPUT.

4 Turn the JOG dial until "GROUP FILE" appears in the display, and then press ENTER.
If the disc has not been put into any group, "NOT FILED" appears in the display.

5 Turn the JOG dial until the group number you want (e. g., GROUP 1) appears in the display.

6 Press ENTER or INPUT to select the group.

Labeling groups (Group Memo)

You can change the preset group number to anything you like, such as a category, using up to 13 characters. Note that you cannot store the Group Memo if you have not put any disc into the group.

1 Press one of the GROUP 1–8 buttons to which you want to assign a Group Memo.

2 Press INPUT.

3 Turn the JOG dial until "GROUP MEMO" appears in the display, and then press ENTER.
The flashing cursor (◀) appears.

4 Turn the JOG dial until the character you want appears in the display.
The cursor disappears and the first space for the Group Memo flashes.
As you turn the JOG dial clockwise, the characters appear in the following order. Turn the JOG dial counterclockwise to go back to the previous character.

(space) A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z 0 1 2 3 4 5 6 7 8 9 ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [¥] ^ _ ` { | } ~

5 Press ENTER to select the character.
The selected character lights up, and the flashing cursor appears to indicate the next space to be input.

If you have made a mistake
Press CLEAR and begin again by inputting the correct characters.

6 Repeat Steps 4 and 5 to input more characters.
See also "Labeling discs on the player" on page 17 for details.

7 Press INPUT to store the Group Memo.

Erasing the Group Memo

1 Follow Steps 1 to 3 in "Labeling groups" to select the Group Memo you want to erase.

2 Press CLEAR.
The Group Memo disappears.

3 Press INPUT.

Playing discs in a group (Group Play)

You can enjoy Continuous or Shuffle Play within a group.

1 Press CONTINUE or SHUFFLE to select the play mode you want before you start playing.

When you select	The player plays
ALL DISCS Continuous Play	All tracks on all discs in the group consecutively
1 DISC Continuous Play	All tracks on the specified disc in the group consecutively
ALL DISCS Shuffle Play	All tracks on all discs in the group in random order
1 DISC Shuffle Play	All tracks on the specified disc in the group in random order

2 Press one of the GROUP 1–8 buttons to select the group and press ▷.
Group Play starts from the disc which is the most upward number and located closest to the playing position. If the disc at the playing position is put into the selected group, the play starts from that disc.

You can specify the first disc to play when starting Group Play
After selecting the group, turn the JOG dial to select the disc, then press ENTER.

You can start Group Play using the remote
Before you start playing, press GROUP/DEL, the number button of the group you want to play, then ENTER.

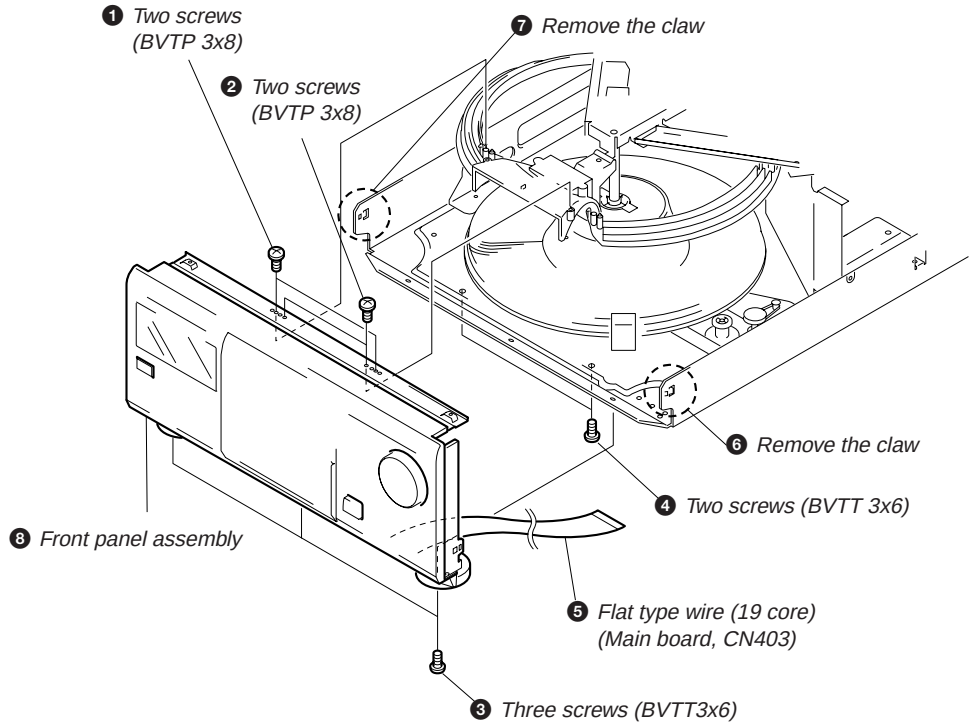
Note
If "NO ENTRY" appears in the display, no disc has been put into the selected group.

Deleting discs from a group

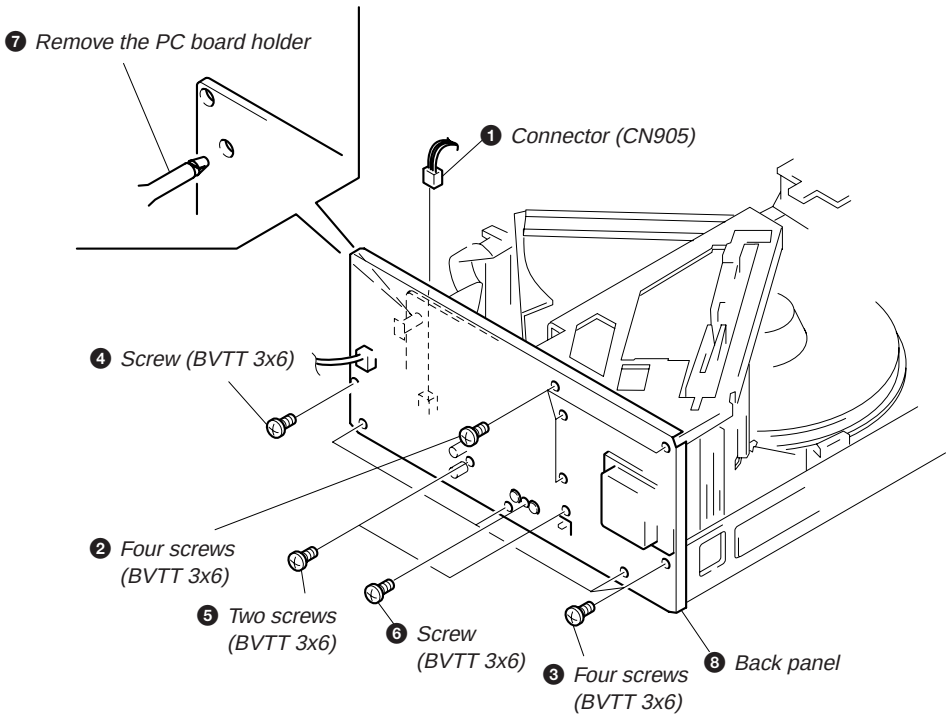
- To delete a disc from a group
  1 Follow Steps 1 through 4 in "Putting discs into groups" on page 20 to select the disc.
  2 Press CLEAR.
  "NOT FILED" appears in the display.
  3 Press INPUT.
- To delete all discs from a group at once
  While holding down one of the GROUP 1–8 buttons you want to clear, press CLEAR.

SECTION 3
DISASSEMBLY

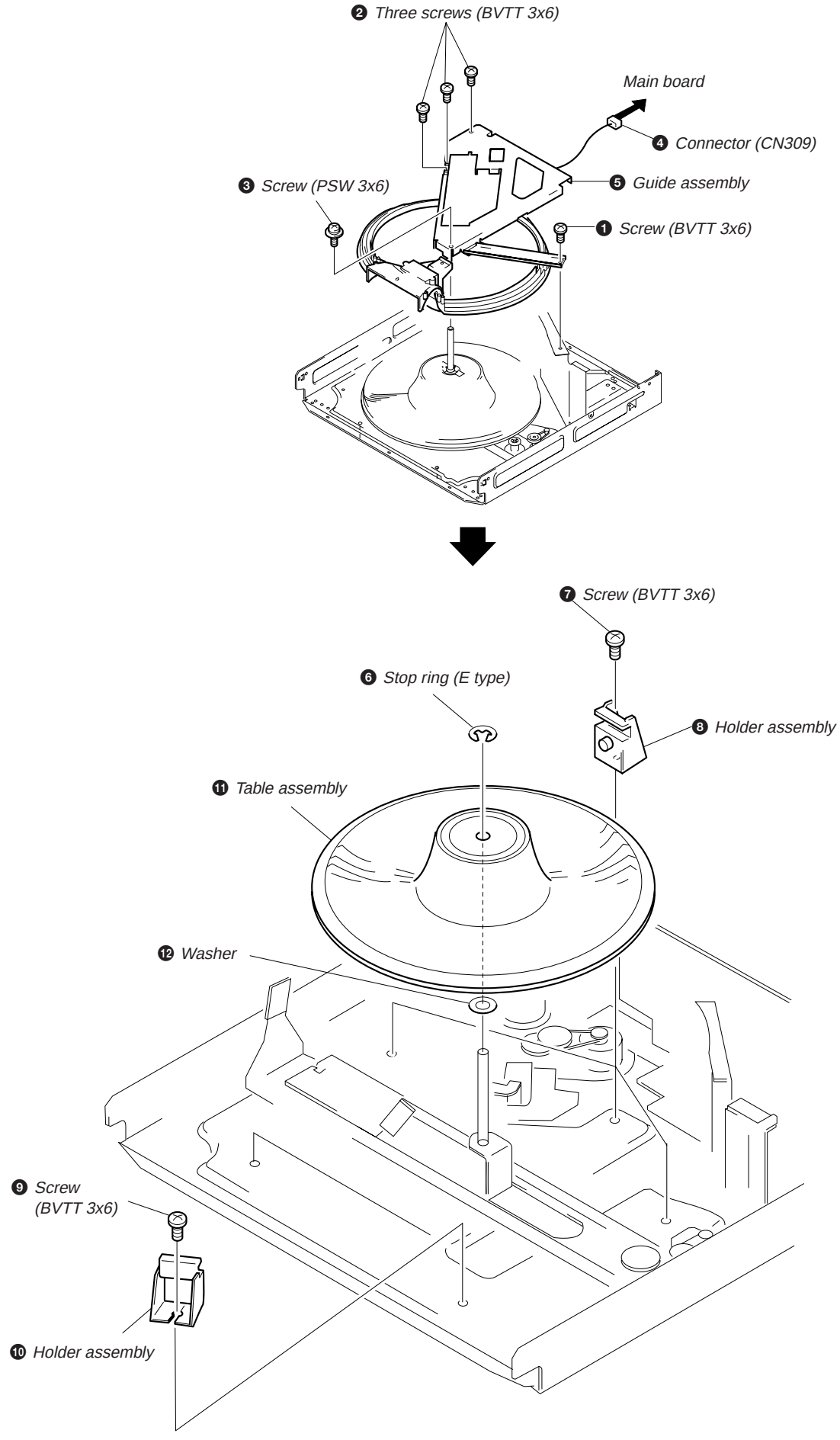
3-1. FRONT PANEL ASSEMBLY


❶ Two screws (BVTP 3x8)
❷ Two screws (BVTP 3x8)
❼ Remove the claw
❻ Remove the claw
❹ Two screws (BVTT 3x6)
❽ Front panel assembly
❺ Flat type wire (19 core) (Main board, CN403)
❸ Three screws (BVTT3x6)

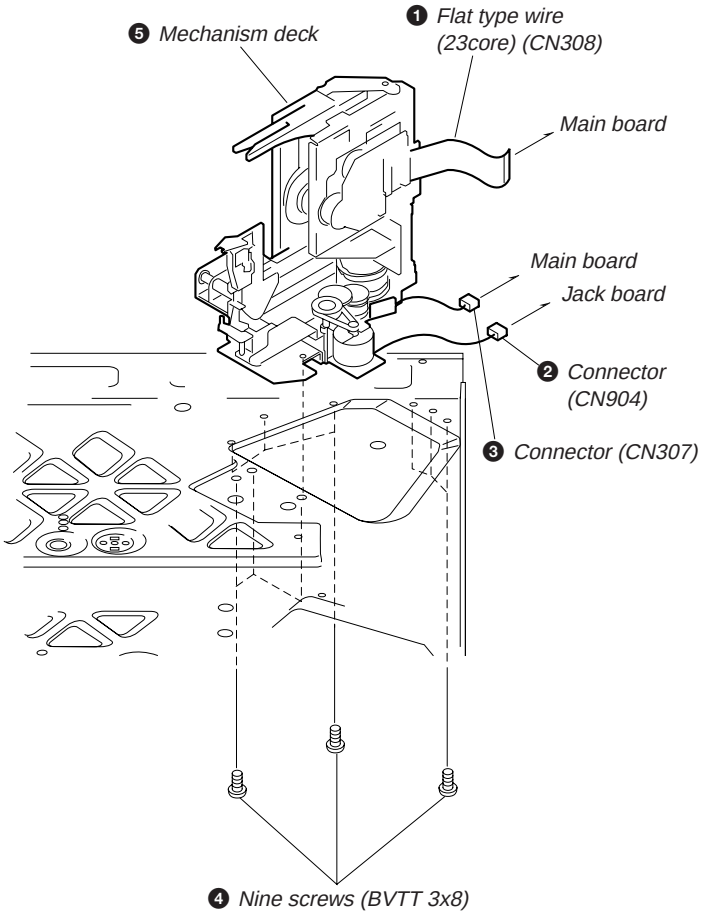
3-2. BACK PANEL


❼ Remove the PC board holder
❶ Connector (CN905)
❹ Screw (BVTT 3x6)
❷ Four screws (BVTT 3x6)
❺ Two screws (BVTT 3x6)
❻ Screw (BVTT 3x6)
❸ Four screws (BVTT 3x6)
❽ Back panel

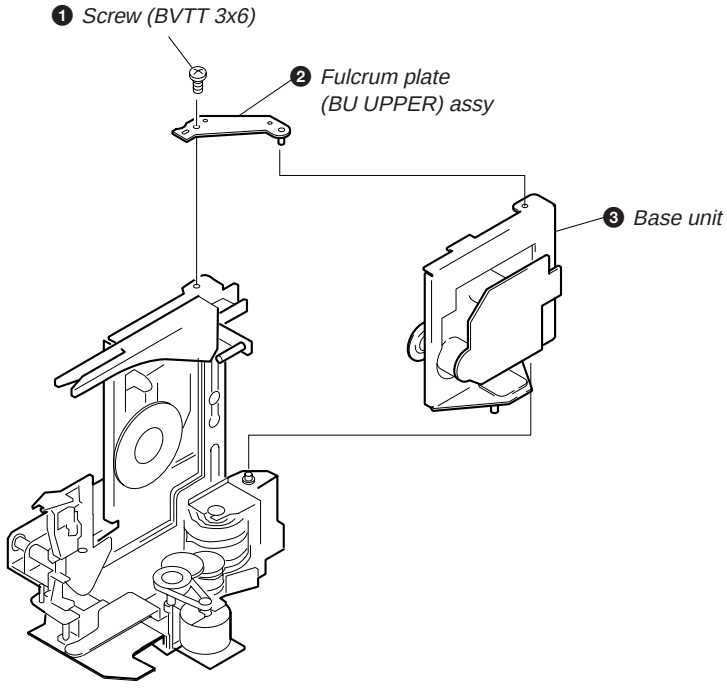
3-3. TABLE ASSEMBLY



3-4. MECHANISM DECK



3-5. BASE UNIT



SECTION 4
TEST MODE

DISPLAY CHECK MODE

With the power turned off (standby state), press the POWER button while pressing the ❚❚ (pause) button.
All FL segments and grids light up together with the ▷ (play), ❚❚ (pause), and standby LEDs.
At the same time, the GROUP LEDs are scanned one by one.

Note: To exit this mode, press the POWER button.

ADJ MODE

1. Turn ON the power of the unit, set disc to disc table, and perform chucking.
2. Disconnect the power supply plug from the outlet.
3. To set ADJ mode, connect the test point (TP301: ADJ) of the MAIN board to Ground, and connect the power supply plug to the outlet.

The power will turn on automatically, and the first track will be played.
In this mode, table rotation and loading operations are not performed because it is taken that the disc has already been chucked.

Note: The same operations are also performed in the following when the test point (TP301: ADJ) is connected to Ground after turning on the power.

- Direct search (movement of sledding motor) is not performed during accessing
- Ignored even when GFS becomes L
- Ignored even when the Q data cannot be read
- Focus gain does not decrease
- Spindle gain does not decrease
- Servo related settings can be set manually and checked (Refer to ADJ Mode Special Functions Table)

ADJ Mode Special Functions Table
(The buttons shown with ( ) function by using the supplied remote commander only)

Button	Function
CONTINUE	Servo average display Displays VC, FE, RF, TE and traverse in hexadecimal numbers
SHUFFLE	Focus bias display Each time this is pressed, the focus bias is switched between 1 and 2 (1) Bias actually set Optimum bias Minimum jitter (2) U:Upper aliasing bias L:Lower aliasing bias
PROGRAM	Auto gain display Displays focus, tracking, sledding in hexadecimal numbers
GROUP 1 (1)	Increases the focus bias in 8 steps.
GROUP 2 (2)	Sets the focus bias in the middle of aliasing.
GROUP 3 (3)	Turns off the tracking and sledding servo
GROUP 4 (4)	Returns the auto gain to the initial value (30)
GROUP 5 (5)	Turns off the focus servo
GROUP 6 (6)	Decreases the focus bias in 8 steps.
GROUP 7 (7)	Re-adjusts the focus bias
GROUP 8 (8)	Turns on the tracking and sledding servo
(9)	Switches the focus servo gain between normal and down FG. norm: normal, FG. down: down
(10/0)	Sets the focus bias to 0 (no bias) Next, displays the jitter measured at the focus bias set
CHECK	S-curve observation mode
CLEAR	Automatic eccentric measurement The results of measurement is displayed in µm directly.

KEY AND FLUORESCENT DISPLAY TUBE CHECK MODE

1. Connect the test point (TP302:AFADJ) of the main board to the GND, and insert the power plug to the outlet to set this mode.
   First, the external SRAM is checked, and if abnormal, “SRAM NG” is displayed.
   If OK, the following steps are performed.

   * Fluorescent Display Tube Check Mode
     The whole fluorescent display tube lights up when the connection in step 1 is made.
   * Key Check Mode
     This mode is set when a button is pressed after the whole fluorescent display tube lights.
     All buttons have a button number.
     When a button is pressed, the counter display is counted up, and the number of that button is displayed.
     However, the counter display will only count up to 24, but the number of buttons pressed will always be displayed.

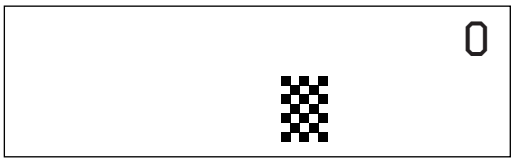
Counter display *Button number display*

Button	Button No. Displayed
POWER	0
GROUP 4	1
GROUP 3	2
GROUP 2	3
GROUP 1	4
GROUP 5	5
GROUP 6	6
GROUP 7	7
ENTER	9
REPAT	10
PROGRAM	11
SHUFFLE	12
CONTINUE	13
TIME/TEXT	14
GROUP 8	15
⏮	21
MEMO SEARCH	22
INPUT	23
▷▷❙	24
CHECK	25
CLEAR	26
▷	All lit (LED lit)
❚❚	Partial lighting 1 (LED lit)
■	Partial lighting 2
TIMER	When the TIMER switch is set to OFF, “0” is displayed at the top right of the fluorescent display tube. When set to ON, “1” is displayed.lit while pressed (grid check).)
DISC/ CHARACTER	• When the jog dial is rotated to the right, the GROUP LEDs light up in the order of 1→2..8→1. • When the jog dial is rotated to the left, the GROUP LEDs light up in the order of 8→7..1→8.

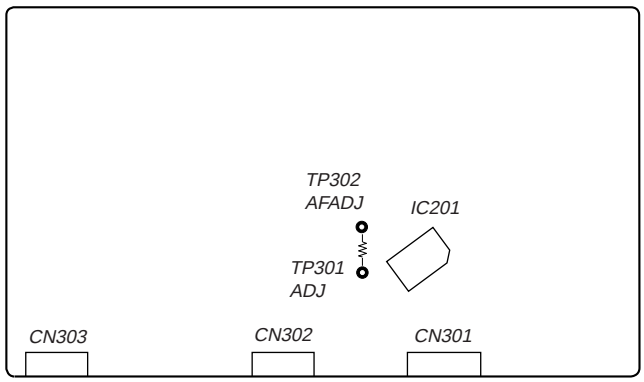
The standby LED lights up when the door switch is shut.

Partial lighting 1

Partial lighting 2



[MAIN BOARD] — Component Side —

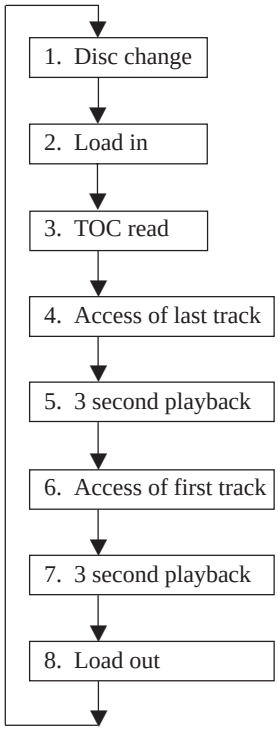


AGING MODE

Aging Mode

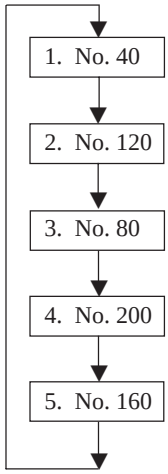
- Mode which repeatedly changes and plays back discs automatically in the unit.
- It will repeat aging as long as no errors occur.
- If an error occurs during aging, it will stop all servos, motors, etc. instantaneously, display the error number, and stop operations. However, the stopping conditions differ according to whether the unit is equipped with the "self-protection function during errors" described later.
  The function serves to maintain the state of the unit when errors occur.

Sequence of Aging Mode



Order of Disc Change

(1 cycle takes 3 minutes)

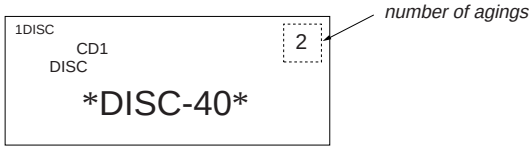


Special Functions in Aging Mode

1 Disc setting mode:
5 discs are set before setting the aging mode. This mode makes the setting of these discs more easy.

2 Self protection function during errors:
Function which voluntarily corrects errors which occur during normal operations by retries.
If this function is not provided, all operations will be stopped without retiring. It is suitable for checking errors with low reproducibility.
If this function is provided, and errors can be corrected by retries, aging will be continued without stopping.

3 Aging cycle count function:
Functions which displays the number of agings carried out on the Fluorescent indicator tube in numbers. One aging cycle consists of five discs.



Aging Method

1. Change the [COMMAND MODE] switch (S501) on set to [CD1].
2. Turn ON the power of the unit. Open the front cover.
3. Press the AGING START button of the remote commander for aging mode (J-2501-123-A).
4. When the disc set mode is set, the ▷ and ▮▮ LEDs blink.
5. Rotate the JOG dial. The slits (No. 40, 80, 120, 160, 200) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
6. Set whether the self-protection function during errors is equipped with the unit. Press the REPEAT button. If "REPEAT" is displayed on the Fluorescent indicator tube, it means the function is provided. If "REPEAT" is not displayed, it means the function is not provided.
7. Press the ▷ button.
8. The ▷ LED blinks, the aging mode is set, and aging is started.
9. The aging cycle lasts 3 minutes. If errors occur during aging, the error number will be displayed on the Fluorescent indicator tube. (Refer to the following table for the details of the errors.)
10. Aging will be repeated as long as no errors occur.
11. After each aging cycle, the number displayed on the Fluorescent indicator tube will increase.
12. To end aging, press the POWER button

Error Display

120 Err01

Disc number Error code

Error code

Code number	Name	Contents
Err 01	DISC sensor check 1	No disc in the specified slit
Err 02	DISC sensor check 2	Disc in other slits
Err 03	Table operation check 1	Table motor current over
Err 04	Table operation check 2	No table sensor input
Err 05	Loading operation check 1	Load in timeover
Err 06	Loading operation check 2	Load out timeover
Err *1	BU related check 1	Access timeover
Err *2	BU related check 2	High speed search NG
Err *3	BU related check 3	Q data read error
Err *4	BU related check 4	BU operation (from focus search to until signal can be read) timeover
Err *5	BU related check 5	GFS monitor error
Err *6	BU related check 6	Focus cannot be imposed by focus search
Err *7	BU related check 7	Auto focus bias adjustment cannot be performed

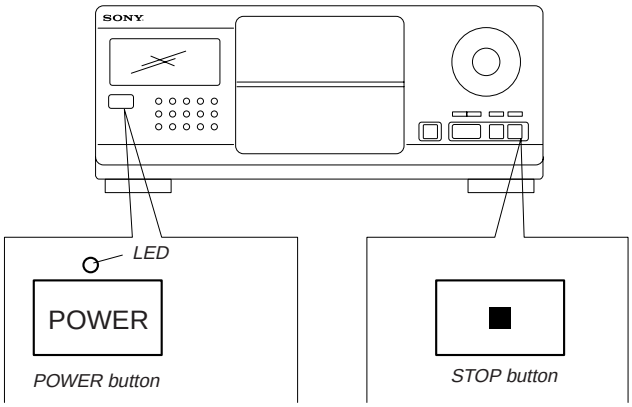
The * numbers mean the following according to the state of the unit during aging
2 : From chucking to end of TOC read
3 : From end of TOC read to end of last track playback
4 : From end of last track playback to end of first track playback

SECTION 5
ADJUSTMENTS

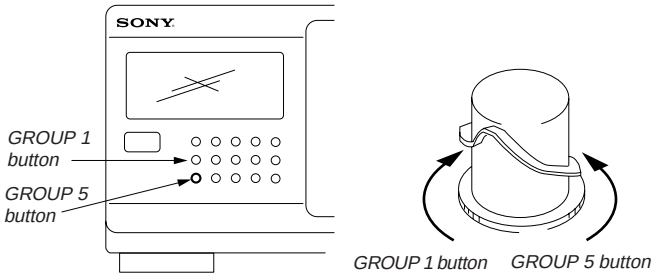
5-1. MECHANICAL ADJUSTMENT

Perform the following steps before carrying out adjustments.

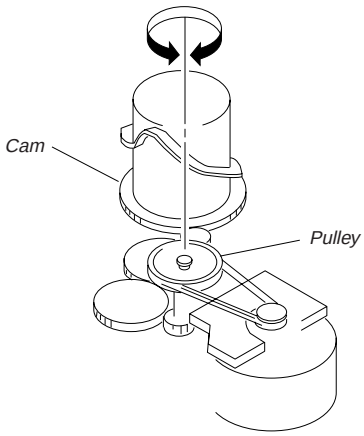
1. Turn ON the power of the unit, set disc to disc table No. 92, and perform chucking.
2. Turn OFF the power.
3. Remove the case.
4. While pressing the STOP button, turn ON the POWER button. The test mode is set.
5. The POWER button LED starts blinking. (Test mode)



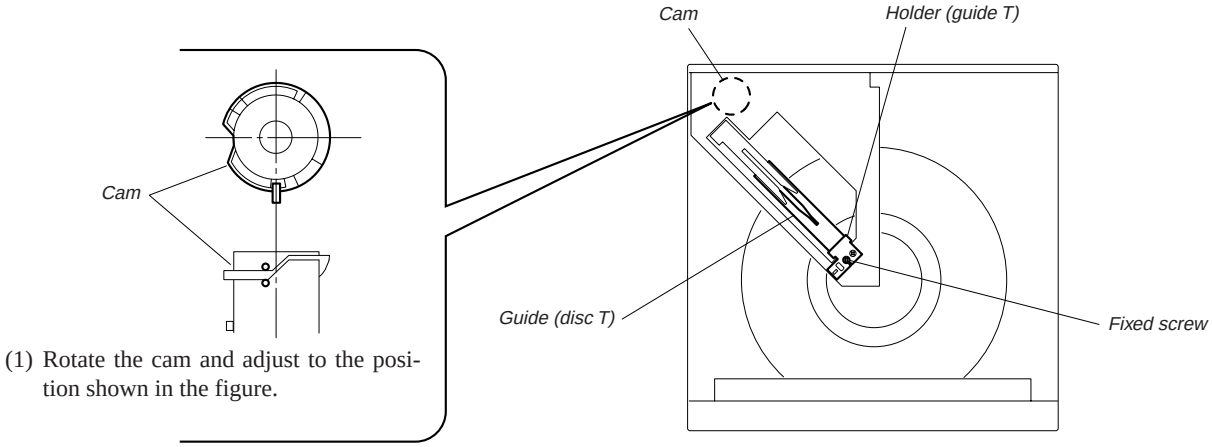
NOTE 1: The cam will start rotating when the GROUP 1 or GROUP 5 button is pressed continuously in the test mode.



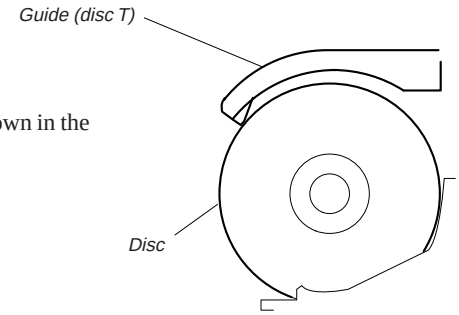
NOTE 2: If the power cannot be supplied, the cam can be rotated by rotating the pulley with your finger.



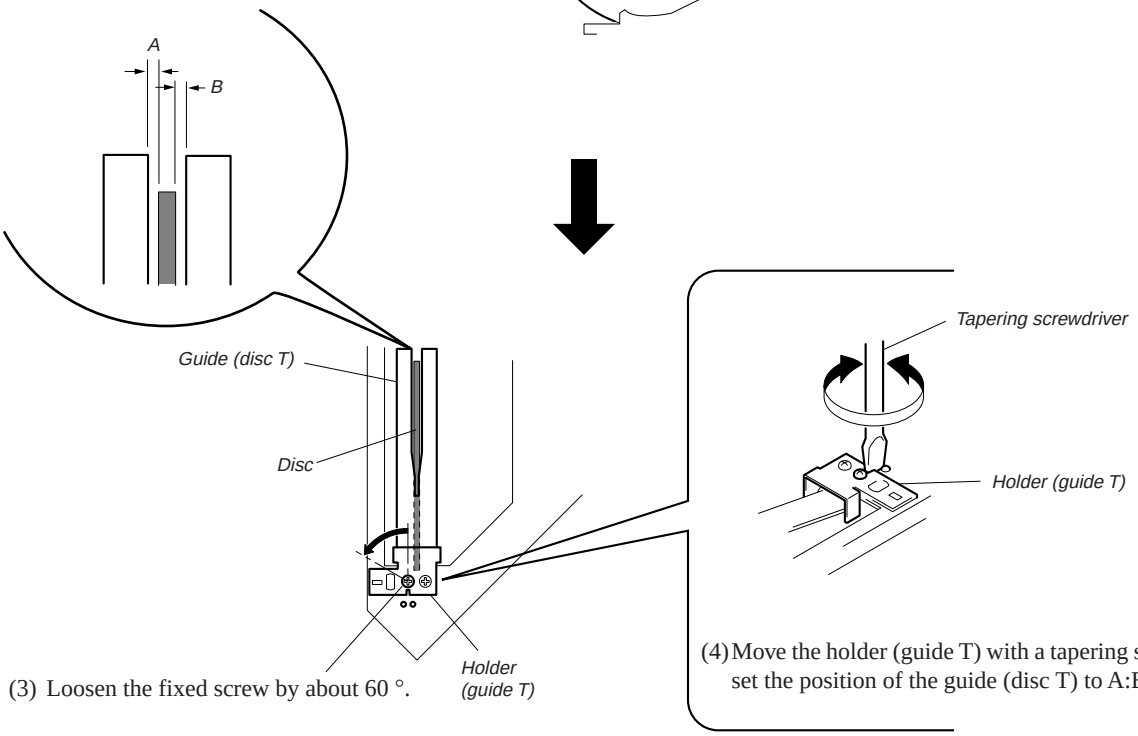
GUIDE (DISC T) ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



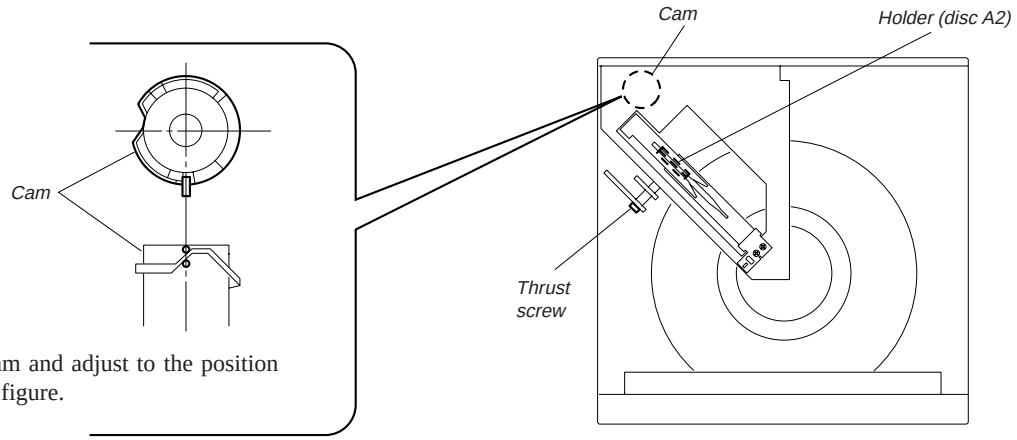
(2) Check that the state is as shown in the figure.



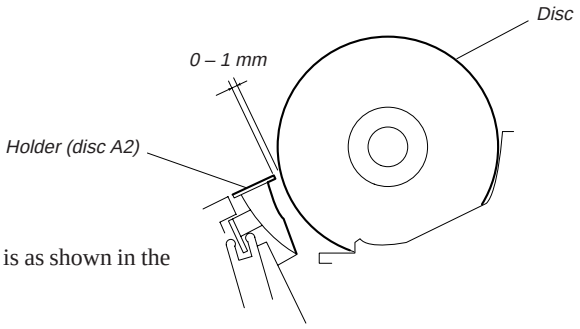
(3) Loosen the fixed screw by about 60 °.

(4) Move the holder (guide T) with a tapering screwdriver, and set the position of the guide (disc T) to A:B=1:1.

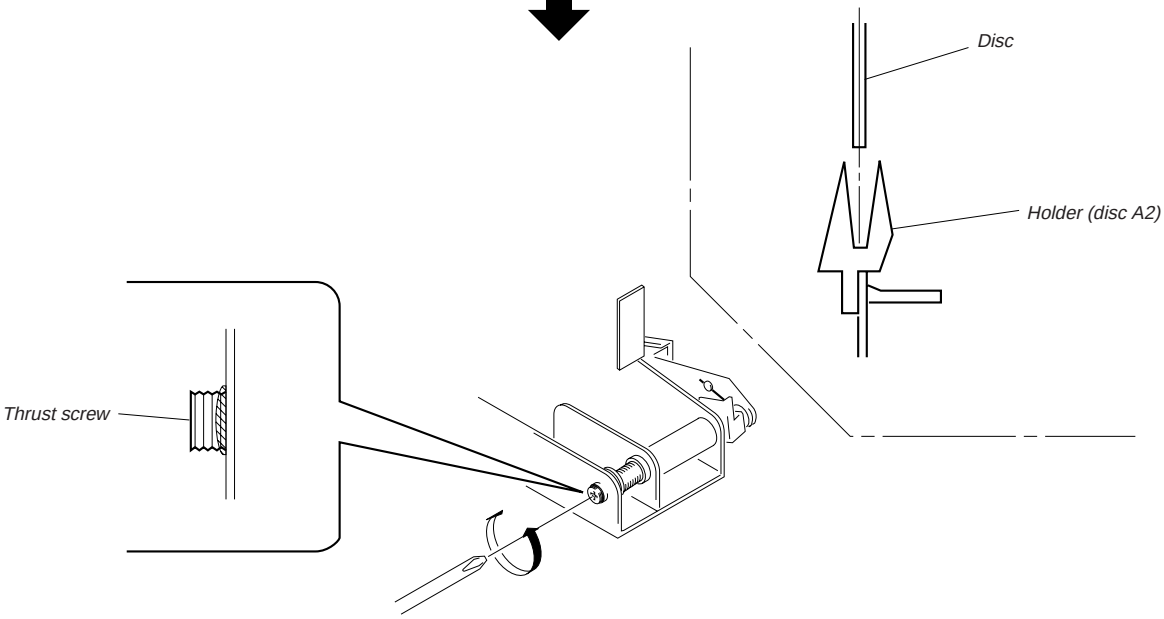
HOLDER (DISC A2) ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



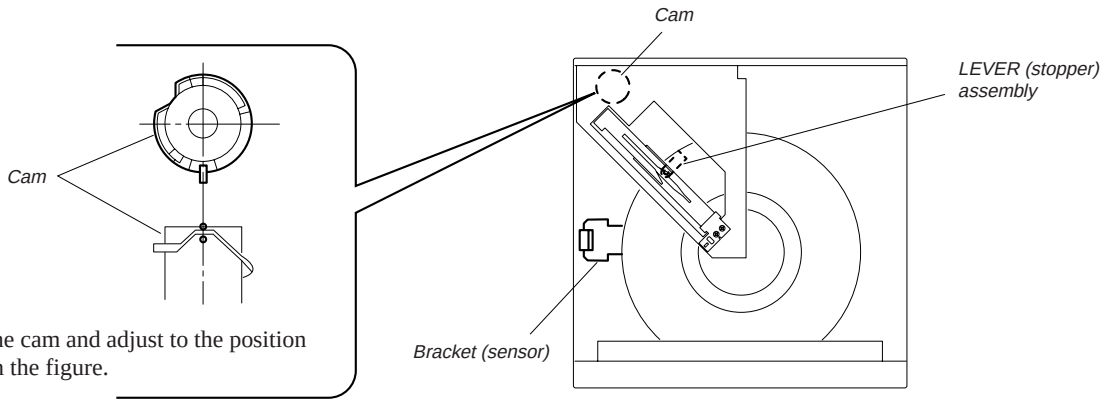
(2) Check that the state is as shown in the figure.



(3) After applying suitable locking compound to the ⊘ part, rotate the thrust screw until the holder (Disc A2) comes to the center of the disc.

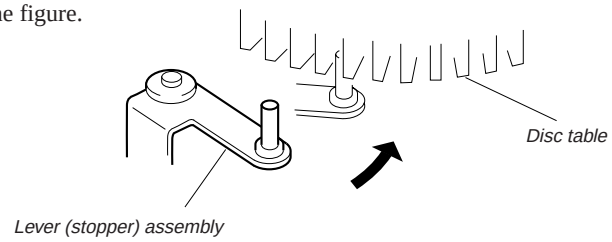
SENSOR ALIGNMENT

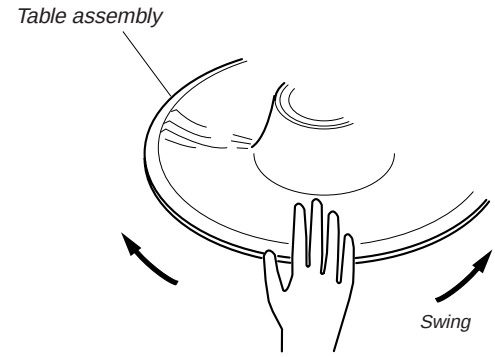
Perform this adjustment after the “holder (disc A2) adjustment”.
If the disc table swings to the left and right just before the disc is chucked, perform the following adjustment.



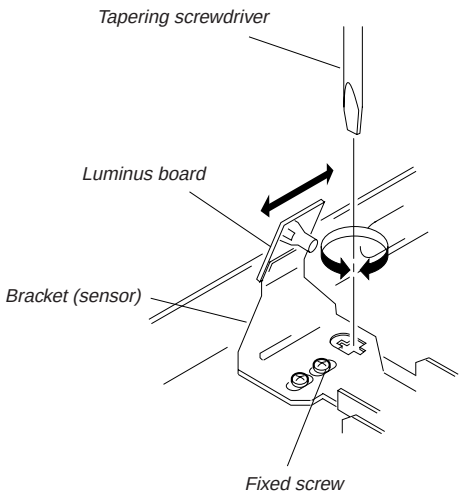
(1) Rotate the cam and adjust to the position shown in the figure.

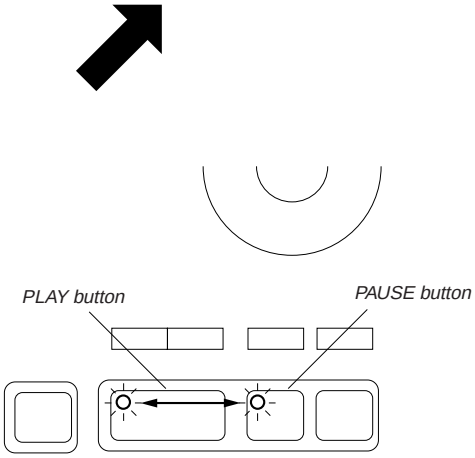
(2) Check that the lever (stopper) assembly secures the disc table as shown in the figure.





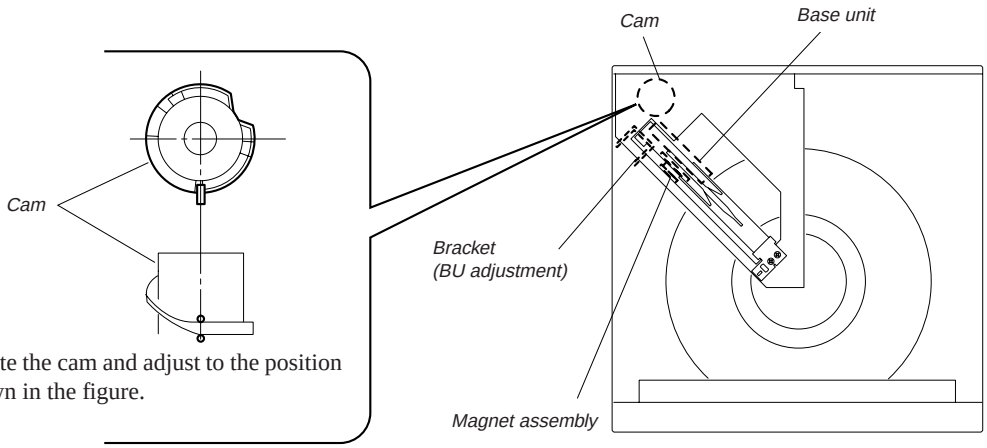
(4) Moving the disc table right and left with a hand after the screw is fixed, the table will move by the play of a disc table. If the LEDs light up alternately, the adjustment will be performed correctly.





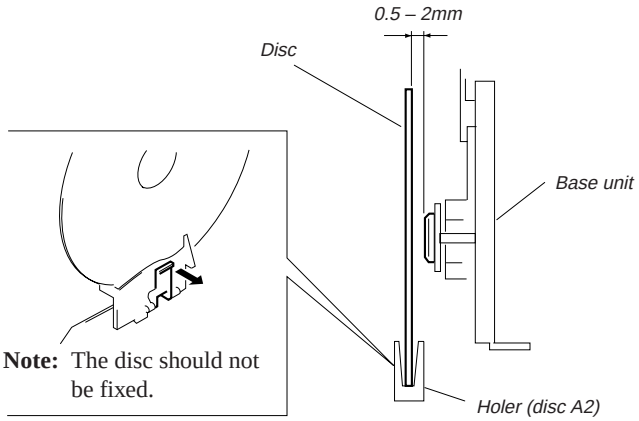
(3) Loosen the fixed screw by 60° to 90°, and use a tapering screwdriver to adjust the screw as shown in the figure.
Move the bracket (sensor) with the tapering screwdriver little by little, and fix the fixed screw at where the play button's LED (green) is switched to the pause button's LED (orange) (or its reverse).

PULLY AND DISC CENTER HOLE ALIGNMENT

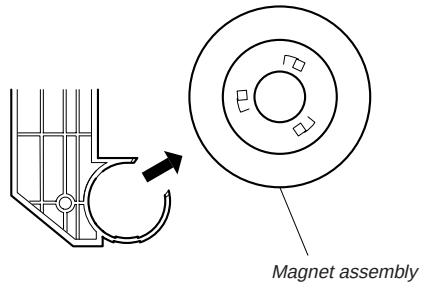


(1) Rotate the cam and adjust to the position shown in the figure.

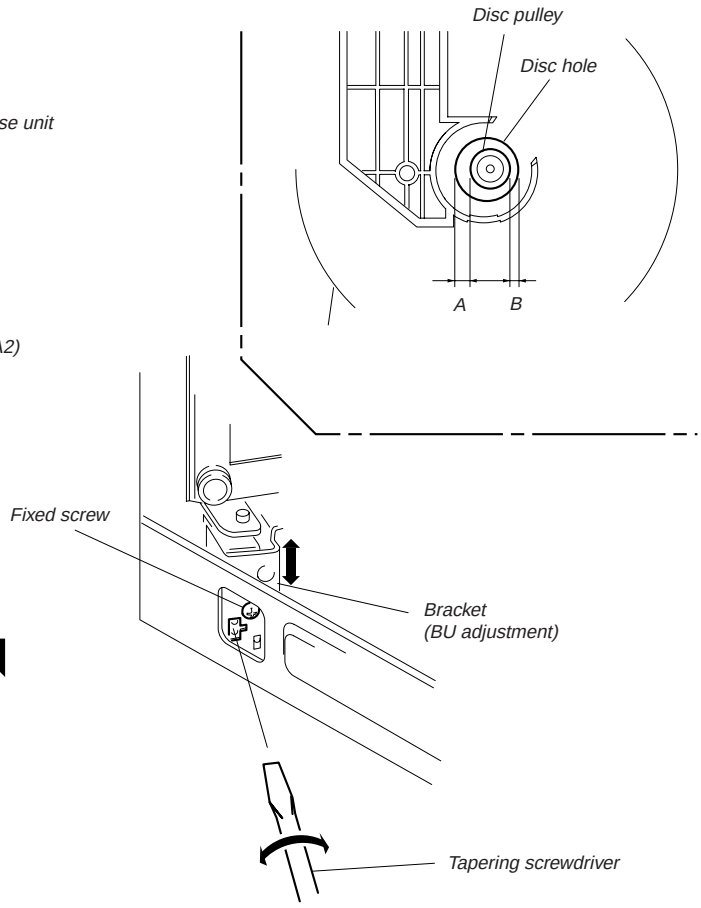
(2) Check that the state is as shown in the figure.



Note: The disc should not be fixed.

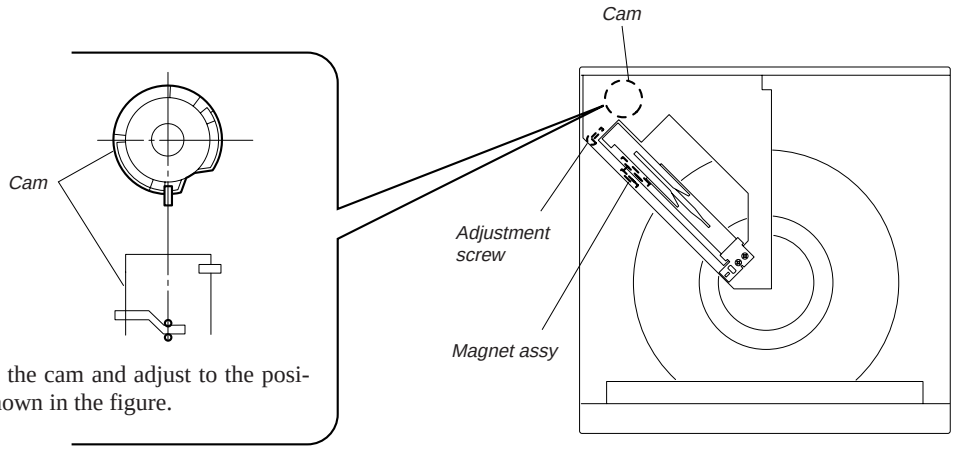


(3) Remove the Magnet assembly.

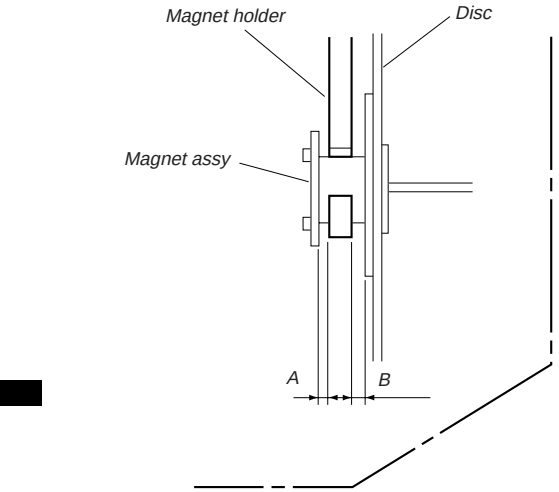


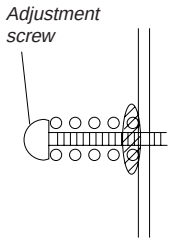
(4) Loosen the fixed screw by 60° to 90°, and move and adjust the bracket (BU adjustment) up and down using a tapering screwdriver so that the positions of the disc hole and disc pulley become A=B or between A:B=2:1 and 1:2.

MAGNET ASSY ALIGNMENT

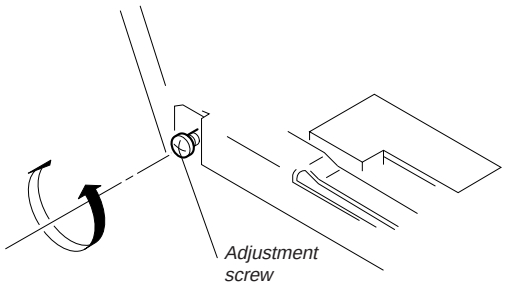


(1) Rotate the cam and adjust to the position shown in the figure.





(3) Apply suitable locking compaund to the ▨ part after adjusting.

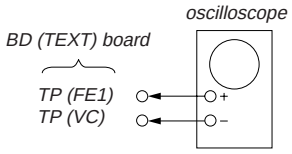


(2) Rotate the adjustment screw until A=B or between A:B=2:1 and 1:2

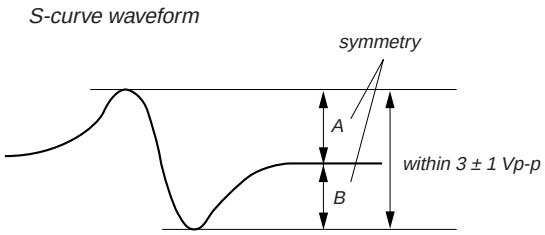
SECTION 6
ELECTRICAL ADJUSTMENTS

Note:
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S-Curve Check



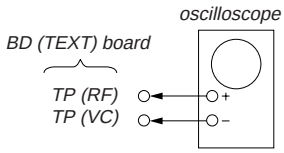
Procedure :
1. Connect oscilloscope to test point TP (FE1) on BD (TEXT) board.
2. Connect test point TP301 (ADJ) on MAIN board to ground with lead wire.
3. Turn POWER switch on to set the ADJ mode.
4. Put disc (YEDS-18) in and playback.
   Press the CHECK button.
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3±1 Vp-p.



6. After check, remove the lead wire connected in step 2.

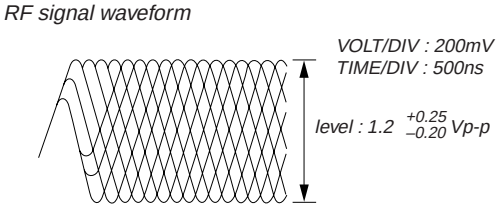
Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

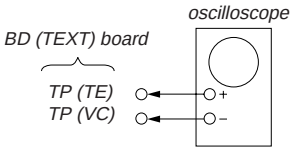


Procedure :
1. Connect oscilloscope to test point TP (RF) on BD (TEXT) board.
2. Turn POWER switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

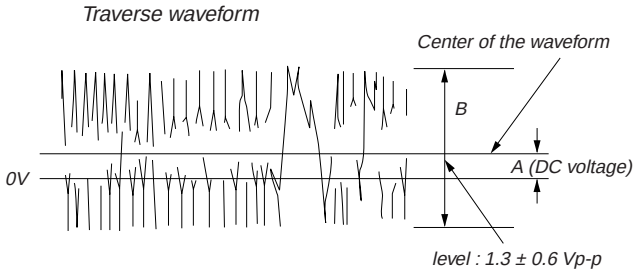
Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



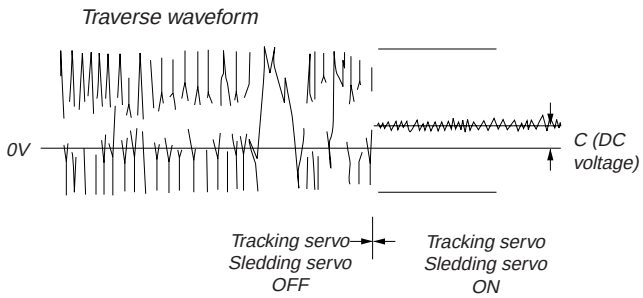
E-F Balance Check



Procedure :
1. Connect oscilloscpe to test point TP (TE) on BD (TEXT) board.
2. Connect the test point TP301 (ADJ) on MAIN board to the ground with a lead wire.
3. Turn the POWER switch on to set the ADJ mode.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the "GROUP 3" button. (The tracking servo and the sledding servo are turned OFF.)
6. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 22%



7. Press the "GROUP 8" button. (The tracking servo and sledding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 6.

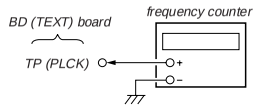


8. Disconnect the lead wire of TP301 (ADJ) connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point TP (PLCK) with lead wire.



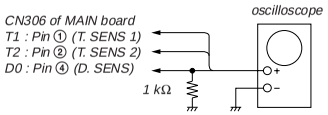
2. Turn POWER switch on.
3. Put the disc (YEDS-18) in to play the number five track. Confirm that reading on frequency counter is 4.3218MHz.

Note: The R308 mounted on the MAIN board has changed to RV301. The set which is changed into RV301 needs to adjust a disc sensor.

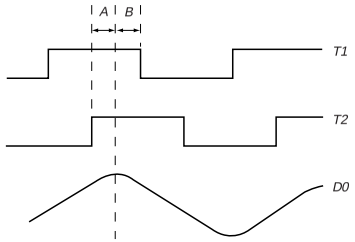
Disc Sensor Adjustment

Perform this adjustment after completing all adjustments of the mechanism section.
If not performed accurately, the presence of the disc may not be detected properly.

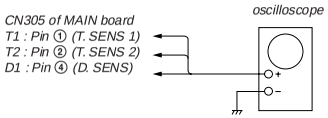
Connection 1:



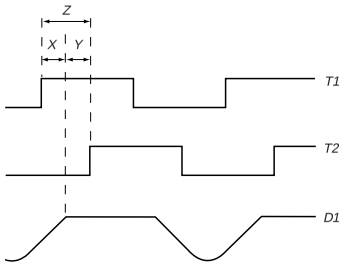
Waveform 1:



Connection 2:

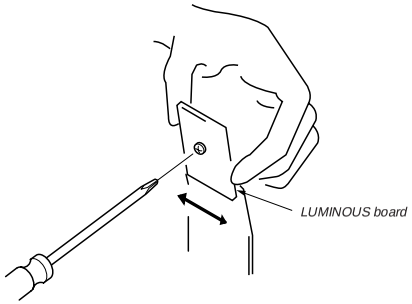


Waveform 2



Procedure:

1. Connect the oscilloscope to Pins ①, ②, and ④ of CN306 of the MAIN board. Also connect a 1 kΩ resistor to Pin ④ at the same time. (Connection 1)
2. Check that no discs are loaded in the unit, and press the POWER button while pressing the INPUT button.
3. The rotary table will continue rotating in the clockwise direction.
4. Observe the waveform at that time on the oscilloscope.
5. Loosen the screw securing the LUMINOUS board slightly.
6. Slide the LUMINOUS board to the left and right so that the peak of the D0 waveform is at the center between the descending point of the T1 waveform and ascending point of the T2 waveform. (Waveform 1) After adjusting, apply locking compound.



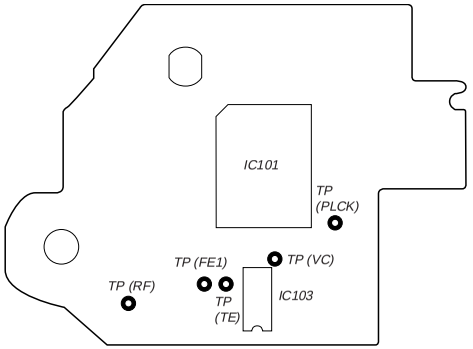
7. Disconnect the resistor connected to Pin ④ of CN306 of the MAIN board. (Connection 2)
8. Observe the waveform on the oscilloscope. (Waveform 2)
9. Adjust RV301 of the MAIN board so that the waveform on the oscilloscope satisfies the following adjustment value.
10. After the adjustment, load a disc only in slit 1, close the front cover, and press the POWER button to turn off the power.
11. Press the POWER button while pressing the ENTER button to turn on the power.
12. If the rotary table makes one round, and “YES” is displayed on the fluorescent indicator tube after it stops, it means that the adjustment has been performed properly.

Adjustment value:

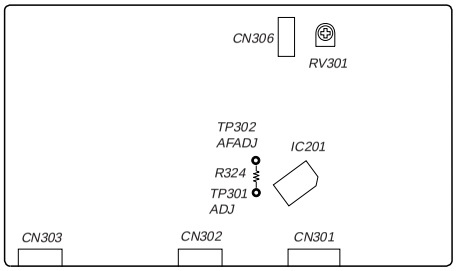
At the shoulder part of waveform D1, T1 becomes H and T2 becomes L, and at the same time, the Y width must not be smaller than 1/4 of the Z width.
In order to satisfy this value more easily, adjust so that X=Y approximately and observe the deviation of the waveform.

Adjustment Location:

[BD (TEXT) BOARD] — Side B —

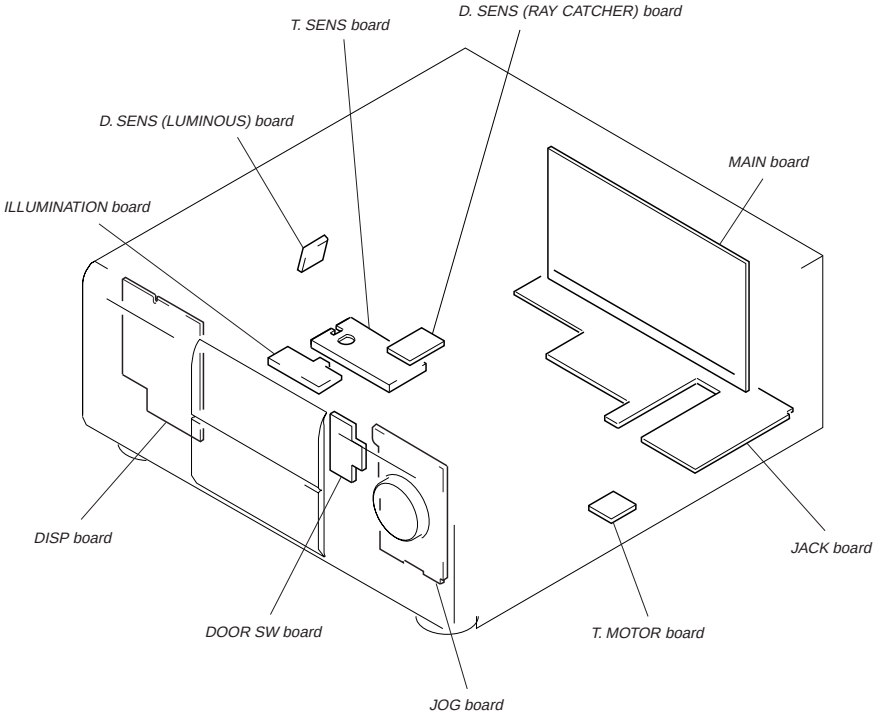


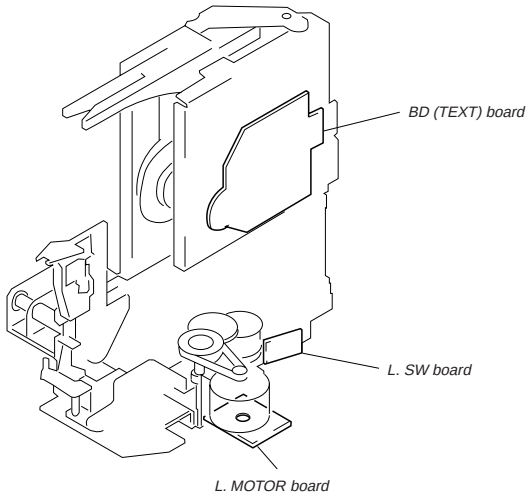
[MAIN BOARD] — Component Side —



SECTION 7
DIAGRAMS

7-1. CIRCUIT BOARDS LOCATION





NOTE

- ○——: parts extracted from the component side.
- ——: parts extracted from the conductor side.
- ○ : Through hole.
- ■ : Pattern from the side which enable seeing. (The other layer's patterns are not indicated.)

NOTE

- All capacitors are in µF unless otherwise noted. pF : µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- B+ : B+ Line
- B– : B– Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions. no mark : STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨ : CD ⇨ : CD (digital)

• BD Section

• Waveforms

① 1.4Vp-p
IC101 ㊱ RFAC (PLAY)

② 2.5V, APPROX 400mVp-p
IC101 ㉗ TE (PLAY)

③ 2.5V, APPROX 200mVp-p
IC101 ㉙ FE (PLAY)

④ 5.2Vp-p, 7.5µsec
IC101 ㊻ MDP (PLAY)

• MAIN Section

• Waveforms

① 4.9Vp-p, 0.48µsec
IC303 ㊳ BCKI

② 5.5Vp-p, 23µsec
IC303 ㊴ LRCKI

③ 5.1Vp-p, 5.644MHz
IC303 ㊼ 128FSO

④ 4.6Vp-p, 33.869MHz
IC303 ㊾ INVO1

⑤ 5.2Vp-p, 22.577MHz
IC303 ⑨ XOUT

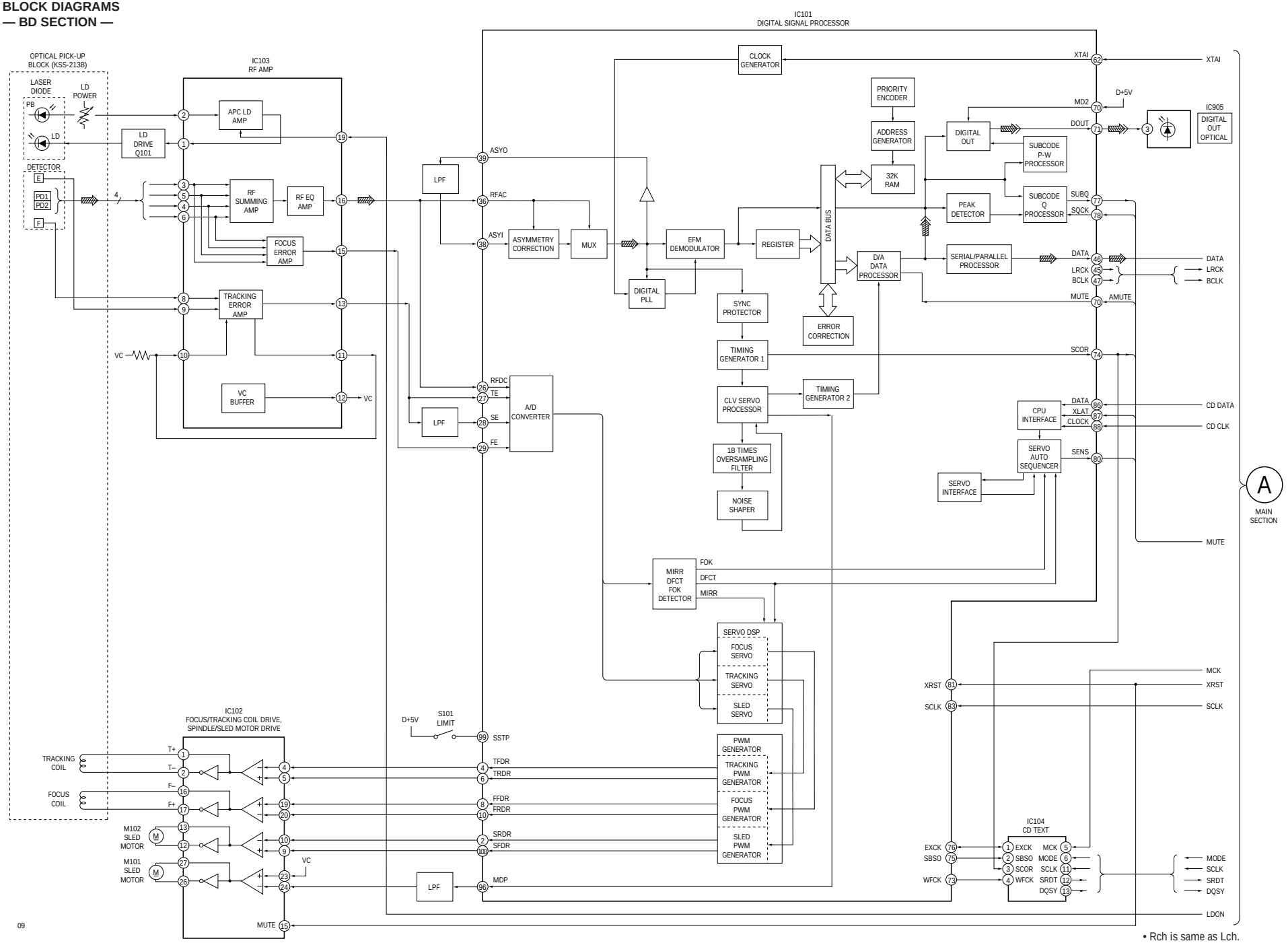
⑥ 4.8Vp-p, 10MHz
IC301 ㉜ XTAL

7-2. IC PIN FUNCTION

• **IC301 SYSTEM CONTROL (CXD84332-052Q)**

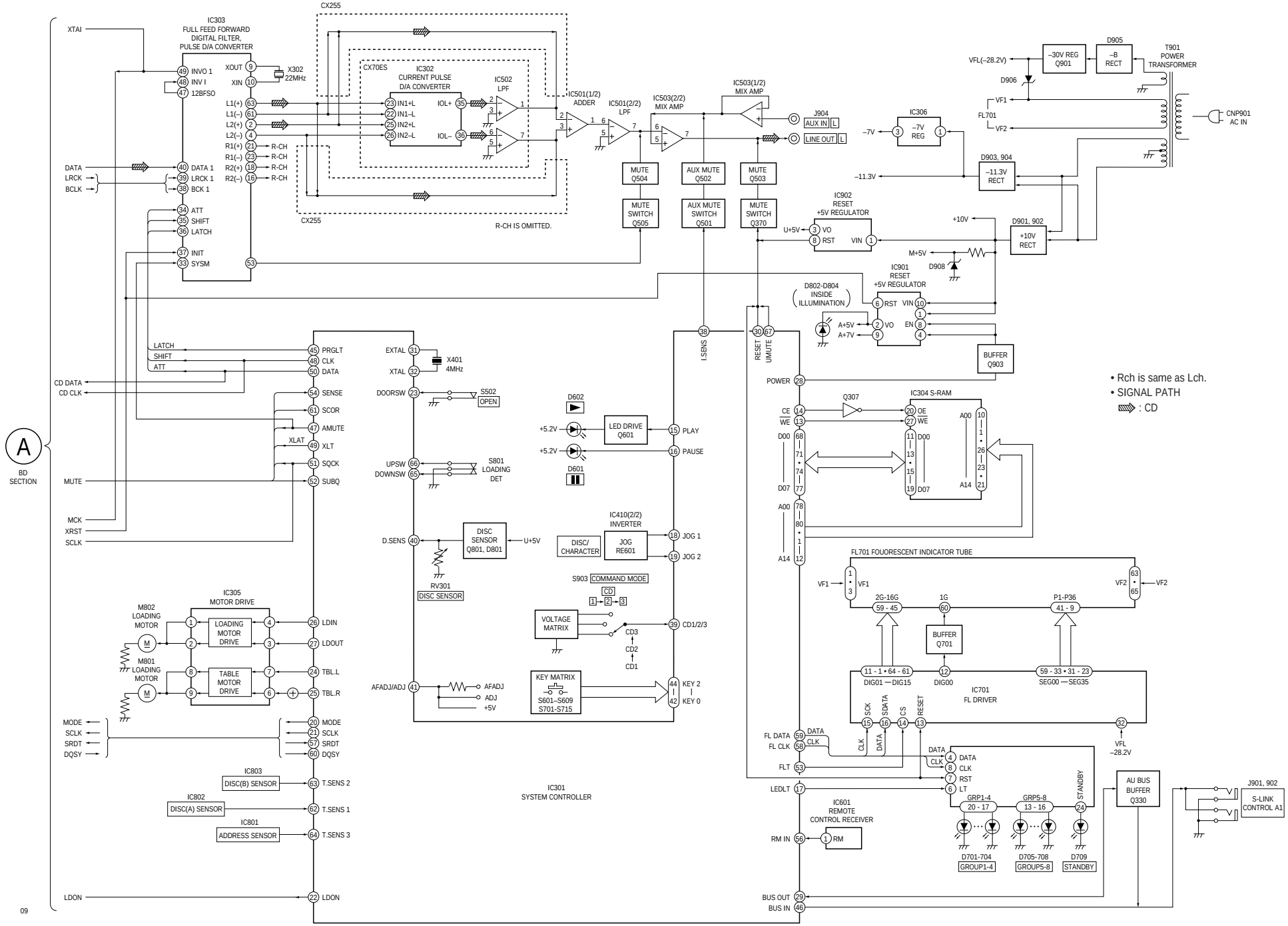
Pin No.	Pin Name	I/O	Function
1	A3	O	SRAM address
2	A4	O	SRAM address
3	A5	O	SRAM address
4	A6	O	SRAM address
5	A7	O	SRAM address
6	A12	O	SRAM address
7	A14	O	SRAM address
8	A11	O	SRAM address
9	A10	O	SRAM address
10	A9	O	SRAM address
11	A8	O	SRAM address
12	A13	O	SRAM address
13	$\overline{WE}$	O	SRAM writing
14	CE	O	SRAM enable
15	PLAY	O	PLAY LED control
16	PAUSE	O	PAUSE LED control
17	LEDLT	I	Latch for LED driver IC
18	JOG1	I	JOG input
19	JOG2	I	JOG input
20	MODE	O	Enable for CD-TEXT
21	SCLK	O	Clock for CD-TEXT
22	LDON	O	Laser diode control
23	DOORSW	O	Front door switch
24	TBL.L	O	Table motor PWM output for left turn
25	TBL.R	O	Table motor PWM output for right turn
26	LDIN	O	Loading motor PWM output for inside direction
27	LDOUT	O	Loading motor PWM output for outside direction
28	POWER	O	IC power switch
29	BUSOUT	O	CONTROL A1 out
30	RESET	I	Reset input L: Reset
31	EXTAL	O	X'tal Oscillation (10MHz)
32	XTAL	I	X'tal Oscillation (10MHz)
33	VSS	–	Connect to ground
34	TX	–	Open
35	TEX	–	Connect to ground
36	AVSS	–	Connect to ground
37	AVREF	–	Connect to +5V
38	I.SENS	O	AUX mute driver
39	CD 1/2/3	I	Command mode switch
40	D.SENS	I	Disc sensor input Less than 3V: Existing disc
41	AFADJ/ADJ	I	Test mode pin
42	KEY2	I	Key input
43	KEY1	I	Key input
44	KEY0	I	Key input
45	PRGLT	O	Latch for digital filter IC
46	BUSIN	I	CONTROL-A1 input L: Active
47	AMUTE	O	Audio mute driver
48	CLK	O	Clock for servo IC and digital filter IC
49	XLT	O	Latch for command
50	DATA	O	Data for command
51	SQCK	O	Clock for sub code Q
52	SUBQ	I	Sub code Q data input
53	FLT	O	Latch for fluorescent indicator driver IC
54	SENSE	I	Servo sensor signal
55	255	I	Model selection operation
56	RMIN	I	Remote control signal
57	SRDT	I	CD-TEXT data
58	FL.CLK	O	Clock for fluorescent indicator driver IC
59	FL.DATA	O	Data for fluorescent indicator driver IC
60	DQSY	I	Synchronous signal for CD-TEXT
61	SCOR	I	Sub code Q synchronous signal Start at rising edge
62	T.SENS1	I	Table position sensor 1 input
63	T.SENS2	I	Table position sensor 2 input
64	T.SENS3	I	Table position sensor 3 input
65	DOWN SW	I	Loading out switch input L: Out
66	UPSW	I	Loading in switch input L: In
67	UMUTE	O	Line mute driver
68	D3	I/O	SRAM data
69	D4	I/O	SRAM data
70	D5	I/O	SRAM data
71	D6	I/O	SRAM data
72	VDD	–	Connect to +5V
73	NC (VDD)	–	Connect to +5V
74	D7	I/O	SRAM data
75	D0	I/O	SRAM data
76	D1	I/O	SRAM data
77	D2	I/O	SRAM data
78	A0	O	SRAM address
79	A1	O	SRAM address
80	A2	O	SRAM address

7-3. BLOCK DIAGRAMS
— BD SECTION —



• Rch is same as Lch.
• SIGNAL PATH
: CD
: CD (digital)

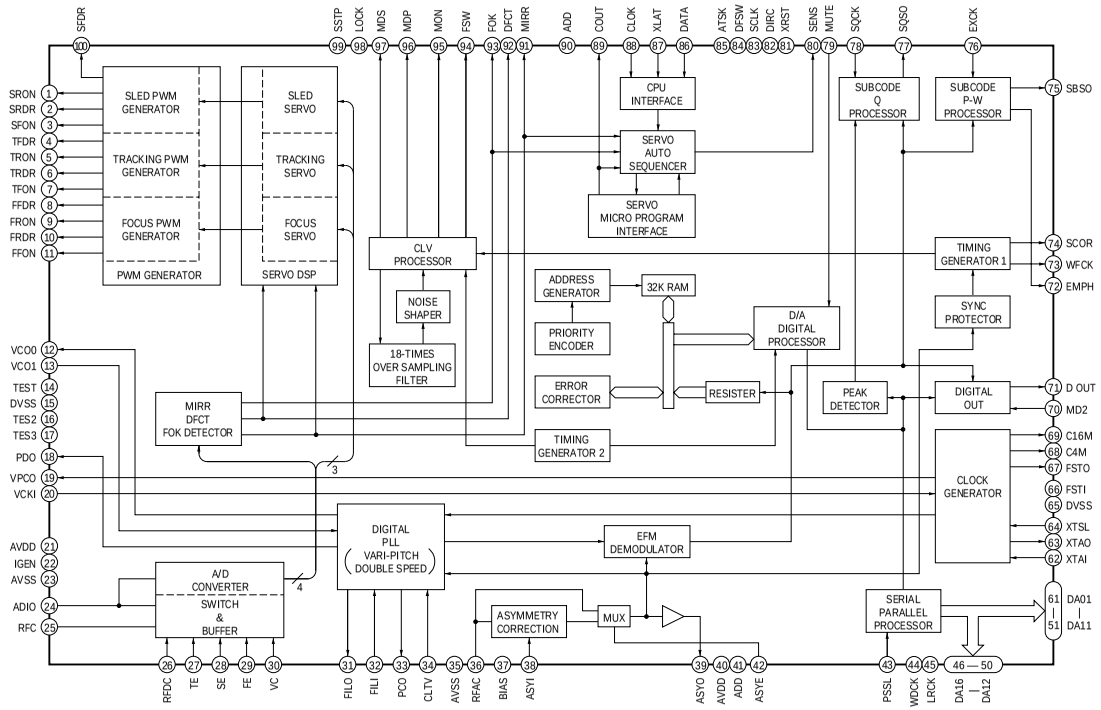
— MAIN SECTION —



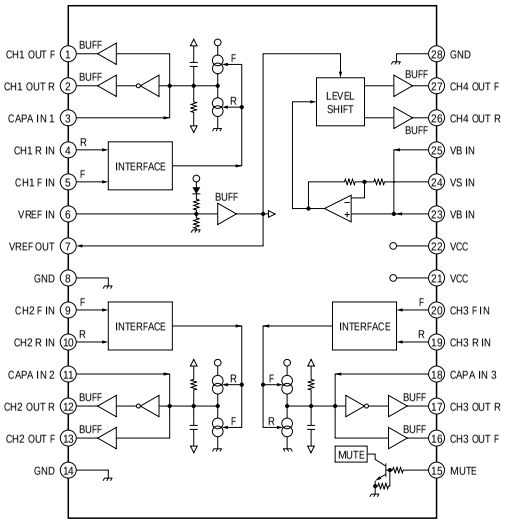
7-14. IC BLOCK DIAGRAMS

• BD Section

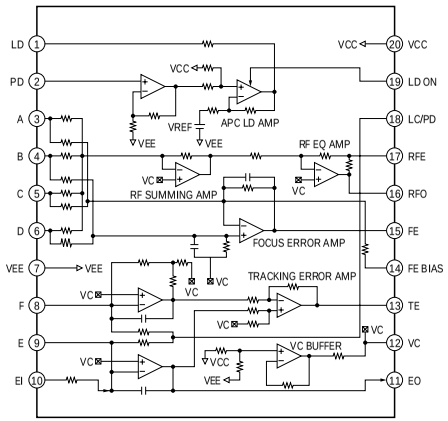
IC101 CXD2545Q



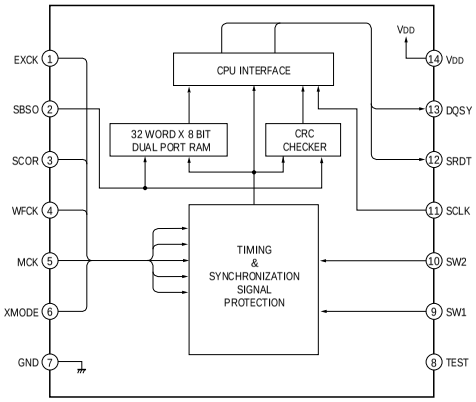
IC102 BA6392FP



IC103 CXA1821M-T6

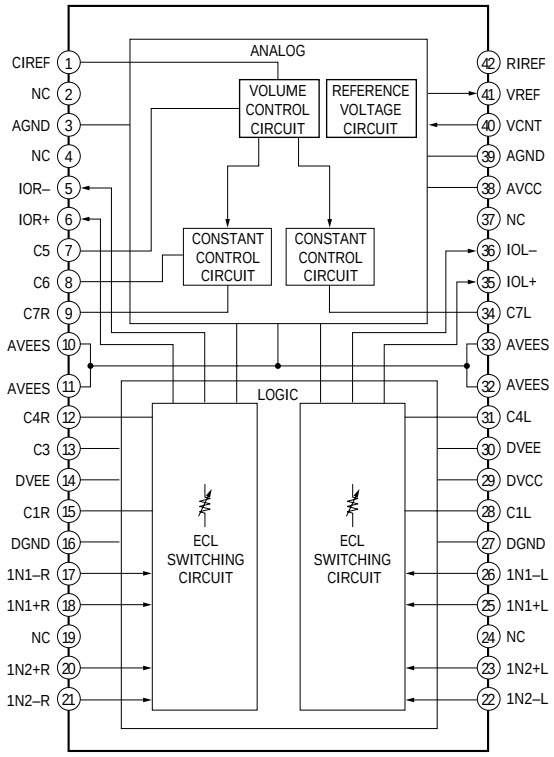


IC104 LC89170M-TLM

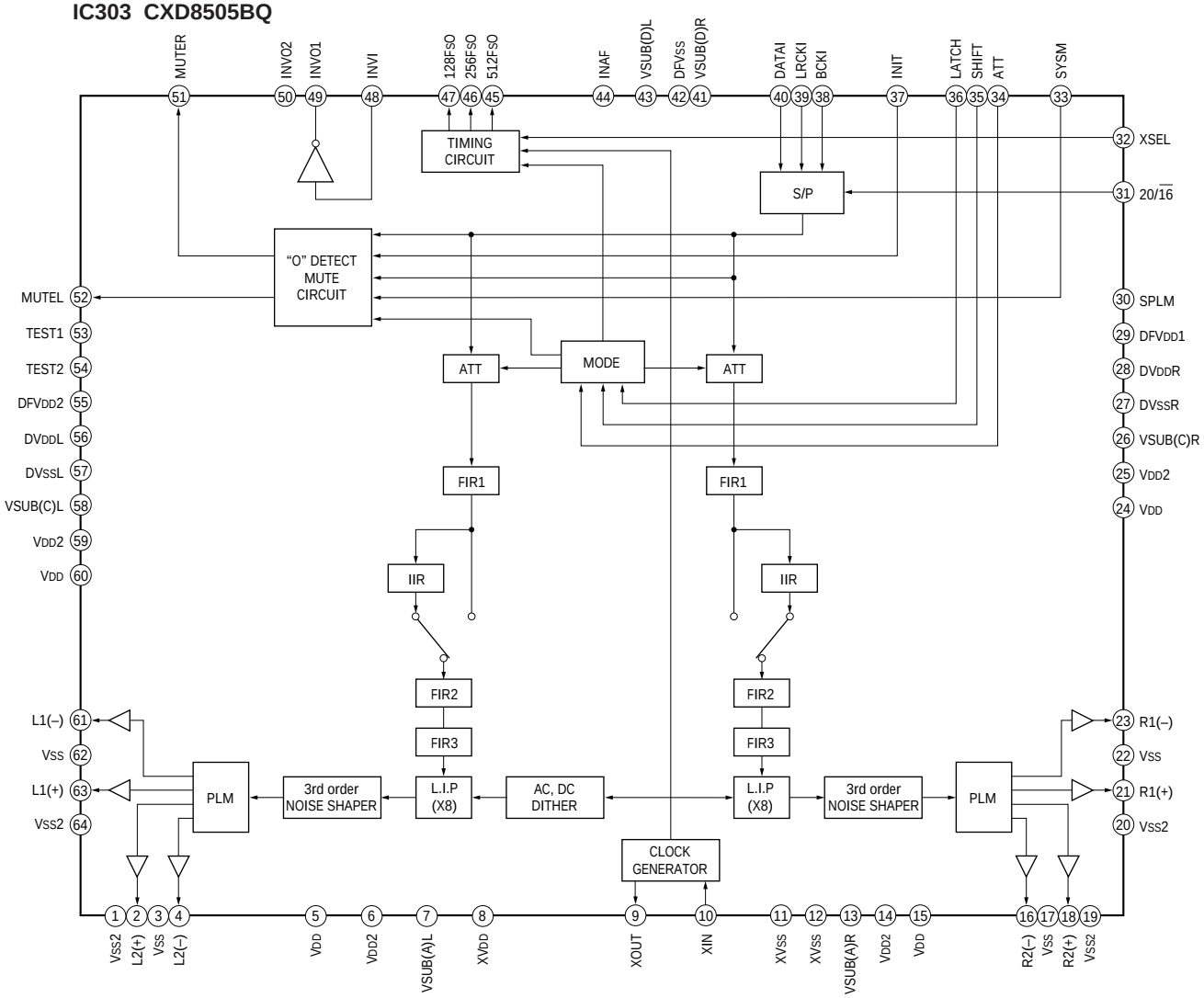


• MAIN Section

IC302 CXA8055M

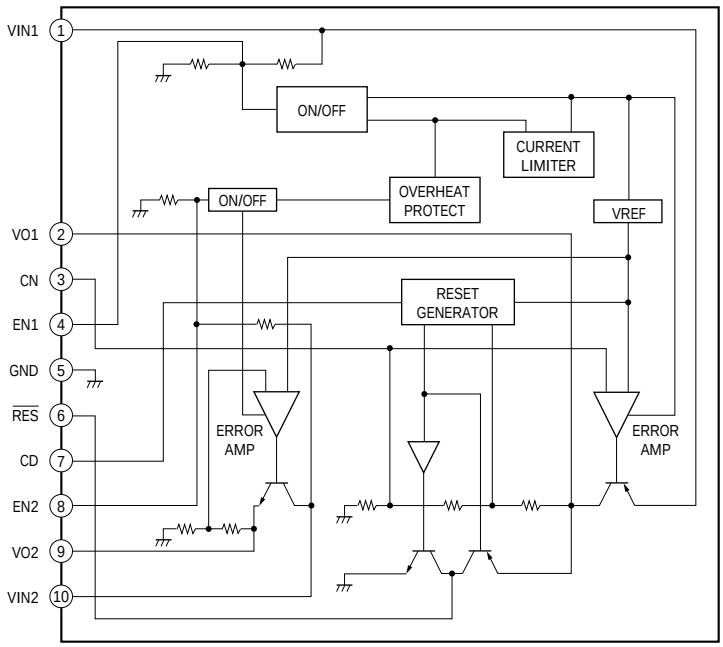


IC303 CXD8505BQ

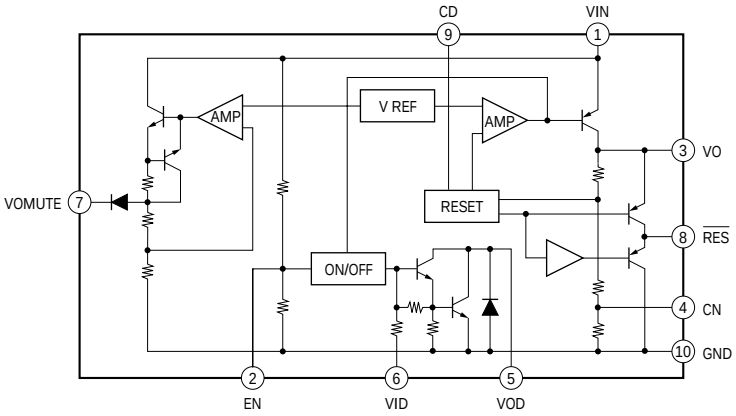


• JACK Section

IC901 LA5616

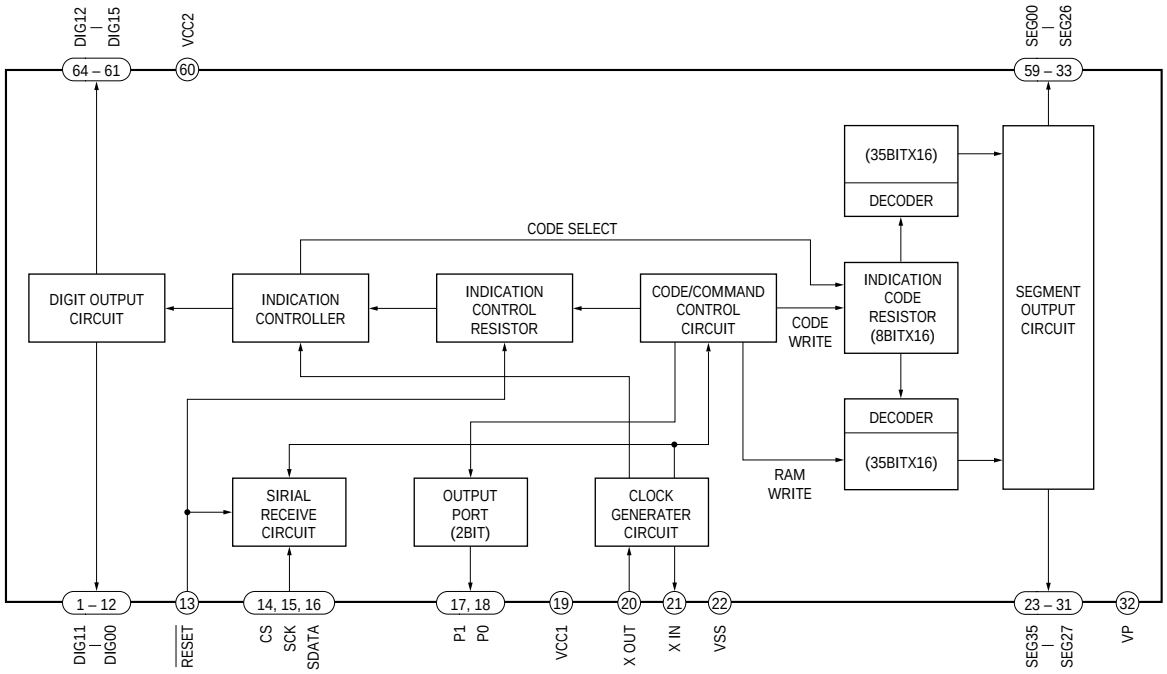


IC902 LA5601

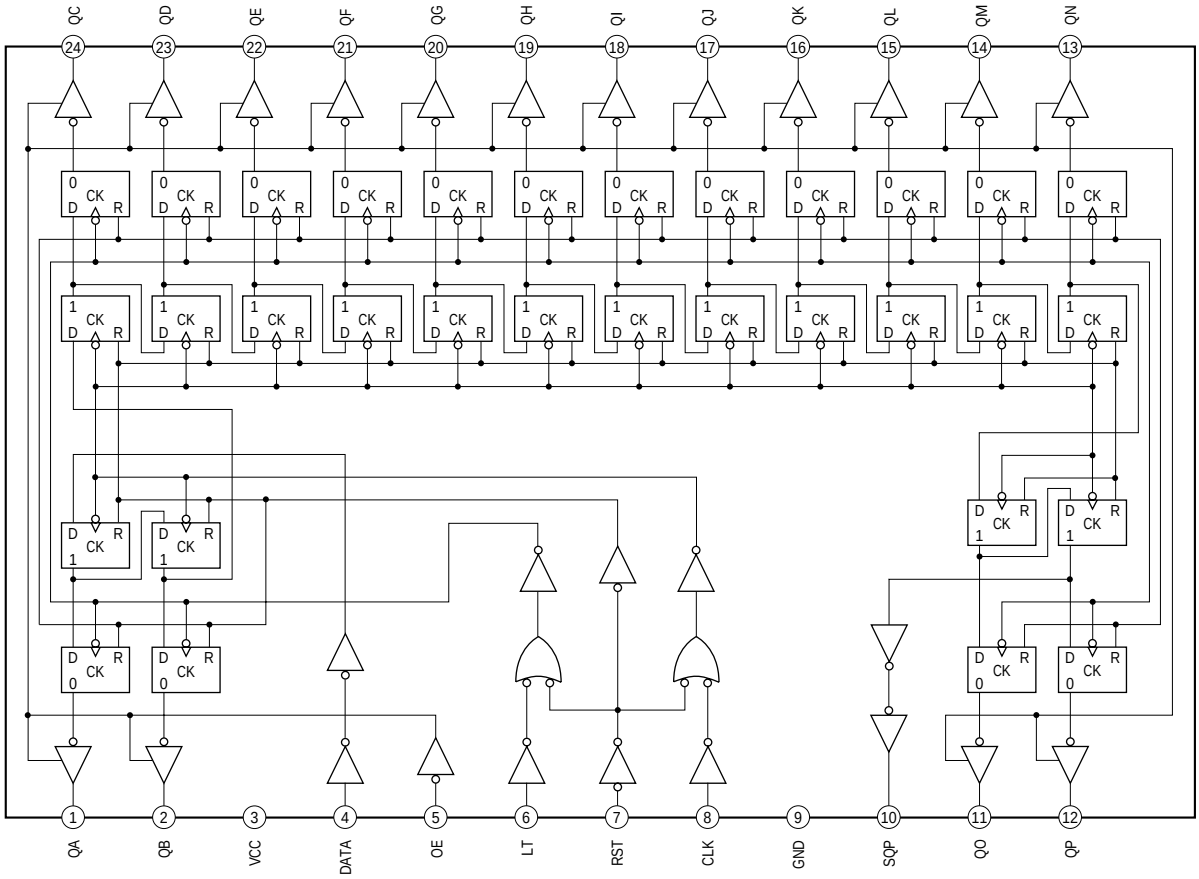


• DISPLAY Section

IC701 M66004M5FP



IC702 M66310FP



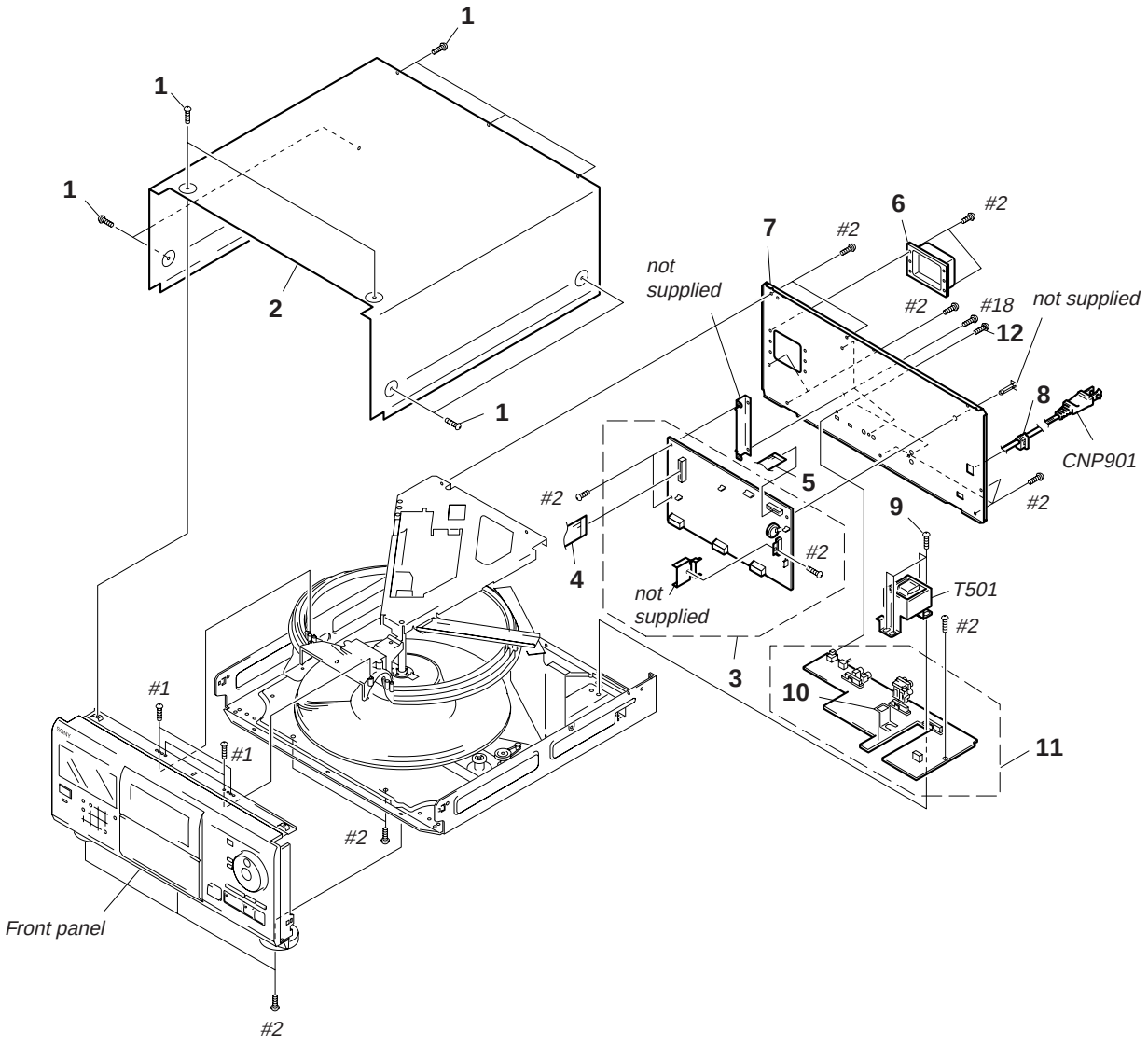
SECTION 8
EXPLODED VIEWS

NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
  CND : Canadian model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

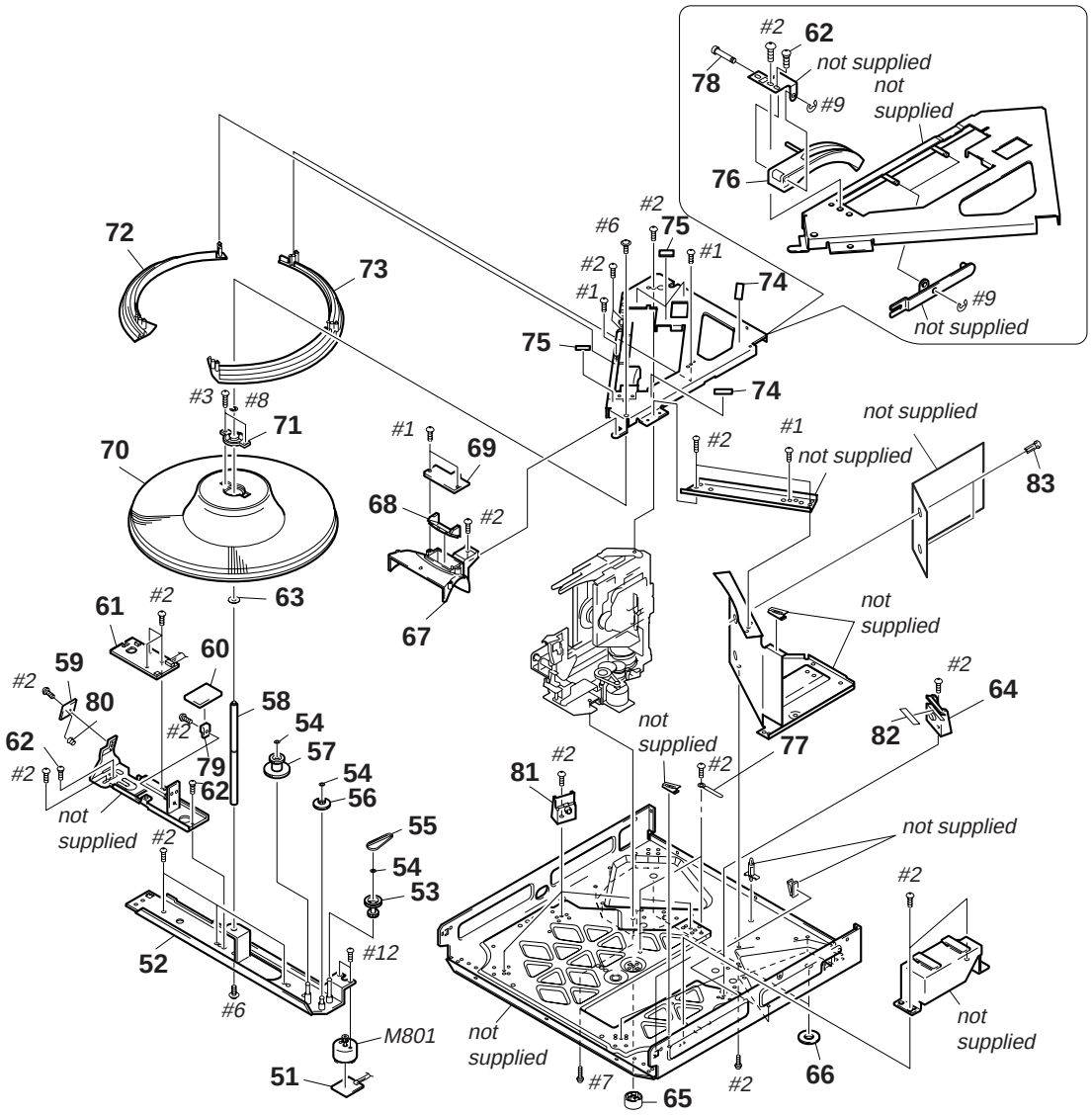
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

8-1. CASE SECTION



Ref. No.	Part No.	Description	Remark
1	3-363-099-01	SCREW (CASE 3 TP2)	
* 2	4-982-946-11	CASE	
* 3	A-4699-699-A	MAIN BOARD, COMPLETE (CX255)	
* 3	A-4699-701-A	MAIN BOARD, COMPLETE (CX70ES)	
4	1-773-183-11	WIRE (FLAT TYPE) (23 CORE)	
5	1-777-345-11	WIRE (FLAT TYPE) (19 CORE)	
* 6	4-982-807-01	COVER (FFC)	
* 7	4-982-813-72	PANEL, BACK (CX255:US)	
* 7	4-982-813-82	PANEL, BACK (CX255:CND)	
* 7	4-983-366-52	PANEL, BACK (CX70ES:US)	
* 7	4-983-366-62	PANEL, BACK (CX70ES:CND)	
* 8	3-703-244-00	BUSHING (2104), CORD	
9	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
* 10	4-962-200-01	PLATE (TR), GROUND	
* 11	A-4699-700-A	JACK BOARD, COMPLETE (CX255)	
* 11	A-4699-702-A	JACK BOARD, COMPLETE (CX70ES)	
12	3-704-515-01	SCREW (BV/RING)(CX255)	
12	3-704-515-11	SCREW (BV/RING)(CX70ES)	
⚠CNP901	1-575-042-21	CORD, POWER	
⚠T501	1-431-447-11	TRANSFORMER, POWER	

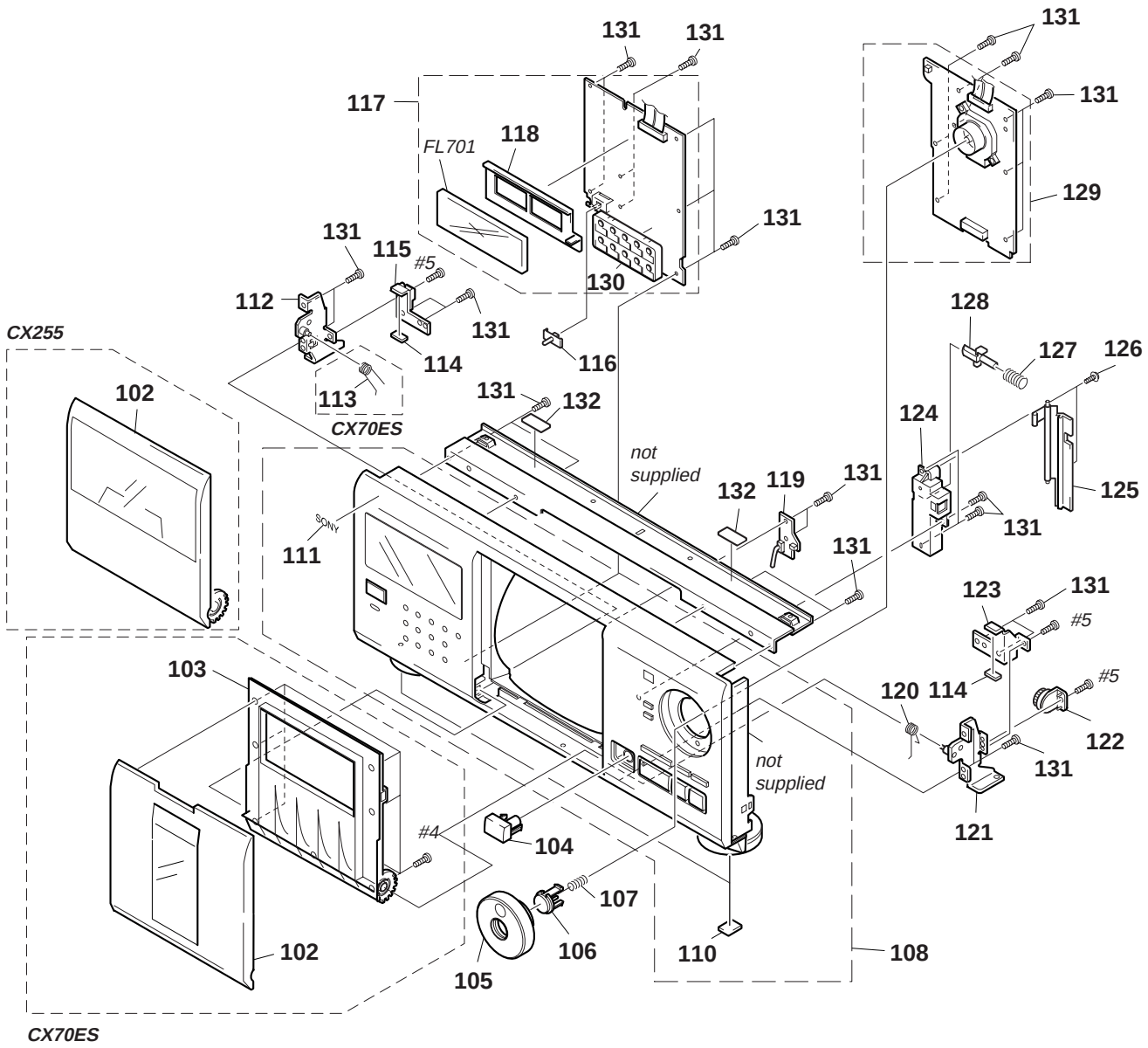
8-2. DISC TABLE SECTION



Ref. No.	Part No.	Description	Remark
* 51	1-661-466-11	T.MOTOR BOARD	
52	X-4947-230-1	BRACKET (TABLE) ASSY	
53	X-4947-607-1	GEAR (PULLEY) ASSY	
54	3-325-697-21	WASHER	
55	4-982-867-01	BELT (TIMING)	
56	4-982-893-01	GEAR (CENTER 2)	
57	4-982-891-01	GEAR (TABLE)	
58	4-982-892-01	SHAFT (CENTER)	
* 59	1-661-468-11	D.SENS (LUMINOUS) BOARD	
* 60	1-661-469-11	D.SENS (RAY CATCHER) BOARD	
* 61	1-661-470-11	T.SENS BOARD	
62	3-356-601-11	SCREW, STEP	
63	3-701-446-21	WASHER, 8	
64	X-4947-229-1	HOLDER (ROLLER) ASSY	
65	4-931-169-01	FOOT	
66	4-983-279-01	CUSHION (RF)	
* 67	4-982-804-01	COVER (DISC)	

Ref. No.	Part No.	Description	Remark
68	4-982-805-01	INDICATOR (INTERNAL)	
* 69	1-661-471-11	ILLUMINATION BOARD	
70	X-4947-231-1	TABLE (200) ASSY	
71	4-976-471-01	BEARING (TABLE)	
* 72	4-982-803-01	RING (B)	
* 73	4-982-802-01	RING (A)	
* 74	3-378-434-01	CUSHION, SARANET	
75	4-985-553-11	CUSHION	
76	4-982-862-01	GUIDE (DISC T)	
77	3-703-397-01	STOPPER, WIRING	
78	4-982-870-01	SHAFT (GUIDE FULCRUM)	
* 79	4-985-300-01	HOLDER (P-T)	
* 80	4-976-473-01	HOLDER (LED-S)	
81	X-4947-606-1	HOLDER (ROLLER 2) ASSY	
82	4-985-574-01	SPACER (ROLLER)	
83	4-053-543-01	RIVET, NYLON	
M801	A-4604-847-A	MOTOR ASSY (TABLE)	

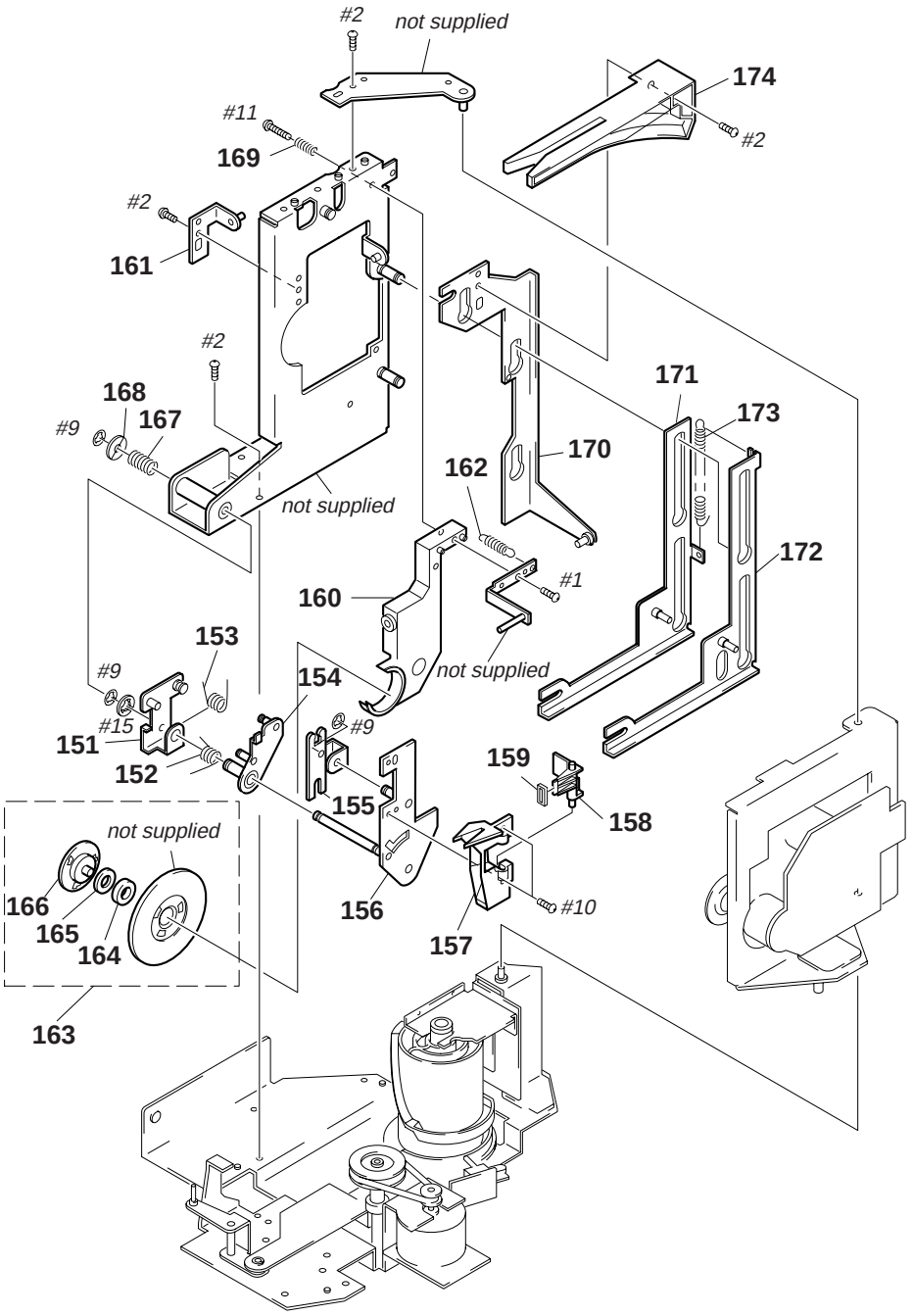
8-3. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
102	4-983-369-01	LID (F)(CX70ES)	
102	X-4948-429-1	LID (205) ASSY (CX255)	
103	4-983-370-01	LID (R)(CX70ES)	
104	4-982-781-01	BUTTON (OPEN)	
105	4-982-787-01	KNOB (JOG)(CX255)	
105	4-982-787-11	KNOB (JOG)(CX70ES)	
106	4-982-788-01	BUTTON (ENTER)	
107	4-984-085-01	SPRING (ENTER), COMPRESSION	
108	X-4948-512-1	PANEL ASSY, FRONT (CX255)	
108	X-4948-513-1	PANEL ASSY, FRONT (CX70ES)	
110	4-977-358-11	CUSHION (8X12.5)	
111	4-963-404-21	EMBLEM (5-A), SONY	
112	X-4947-219-1	PLATE (A) ASSY, FULCRUM	
113	4-982-797-01	SPRING (A), TORSION (CX70ES)	
114	4-982-799-01	CUSHION (STOPPER)	
* 115	4-982-793-01	STOPPER (A)	
116	3-917-216-21	KNOB (TIMER)	

Ref. No.	Part No.	Description	Remark
* 117	A-4699-047-A	DISP BOARD, COMPLETE	
* 118	4-982-811-01	HOLDER (FL)	
* 119	1-661-464-11	DOOR SW BOARD	
120	4-982-798-11	SPRING (B), TORSION	
121	X-4947-220-1	PLATE (B) ASSY, FULCRUM	
122	3-354-963-01	DAMPER	
* 123	4-982-794-01	STOPPER (B)	
* 124	4-982-782-01	HOLDER (OPEN)	
* 125	4-982-783-01	LEVER (WINDMILL)	
126	4-933-134-01	SCREW (+PTPWH M2.6X6)	
127	4-982-785-01	SPRING (OPEN), COMPRESSION	
128	4-982-784-01	LEVER (LOCK)	
* 129	A-4699-046-A	JOG BOARD, COMPLETE	
* 130	4-982-812-01	HOLDER (LED)	
131	4-951-620-01	SCREW (2.6X8), +BVTP	
132	4-985-553-21	CUSHION	
FL701	1-517-564-11	INDICATOR TUBE, FLUORESCENT	

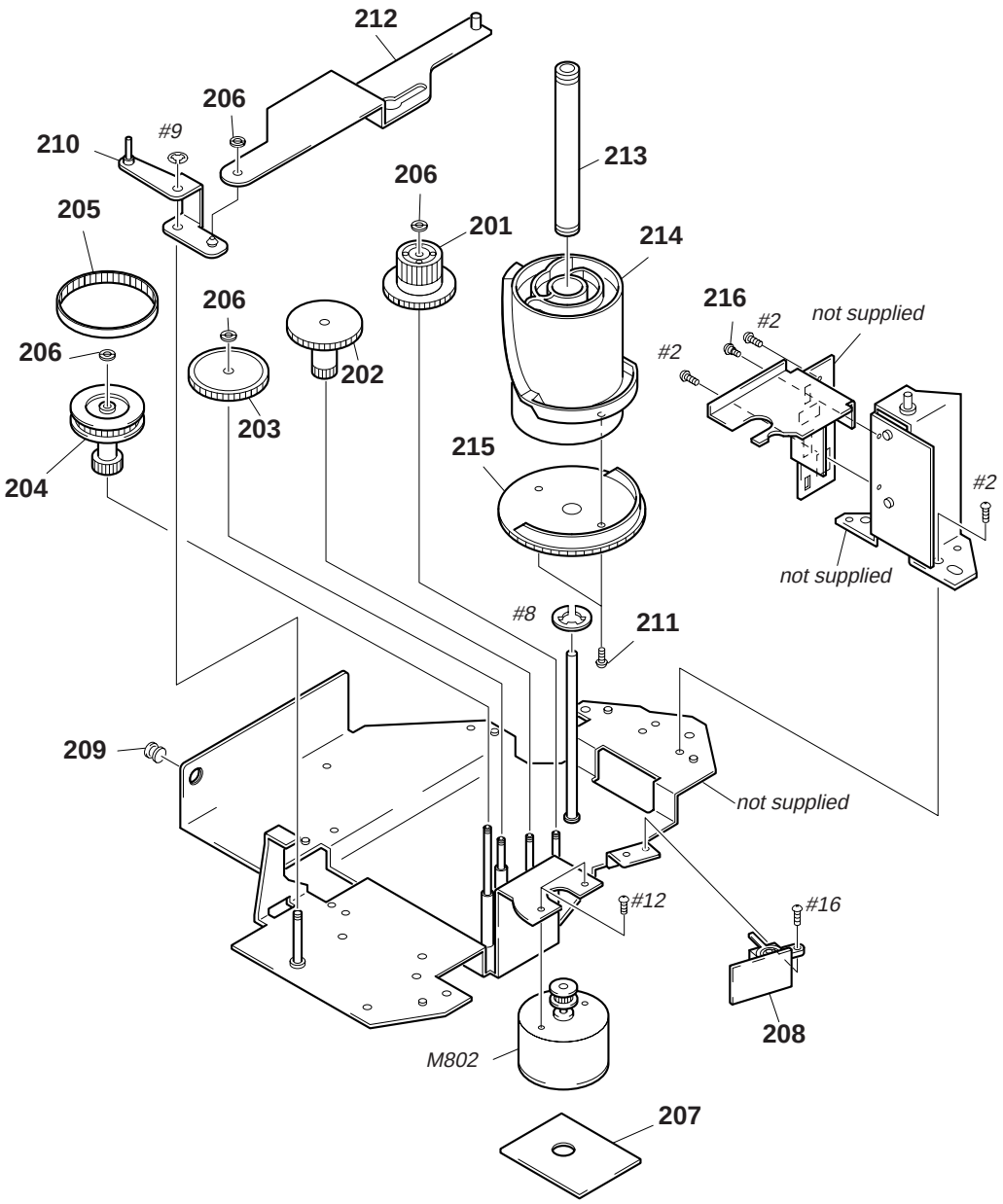
8-4. MECHANISM SECTION-1 (CDM-40)



Ref. No.	Part No.	Description	Remark
151	X-4947-241-1	LEVER (C) ASSY	
152	4-982-882-01	SPRING (LIMITTER), TORSION	
153	4-982-881-01	SPRING (HOLDER), TORSION	
154	X-4947-239-1	LIMITTER (A) ASSY	
155	4-982-853-01	LEVER (B)	
156	X-4947-240-1	LEVER (A) ASSY	
157	4-988-143-01	HOLDER (DISC A2)	
158	4-982-855-01	HOLDER (DISC B)	
159	4-982-856-01	PAD	
160	4-976-458-01	HOLDER (MAGNET)	
161	X-4946-326-1	HOLDER (CLAMP) ASSY	
162	4-983-777-01	SPRING (MG), TENSION	

Ref. No.	Part No.	Description	Remark
163	A-4672-092-A	MAGNET ASSY	
164	3-366-559-02	MAGNET (CHUCK)	
165	4-960-633-01	YOKE (MAGNET)	
166	4-960-632-11	PULLEY (B)	
167	4-983-319-01	SPRING (THRUST), COMPRESSION	
* 168	4-976-456-01	WASHER (STOPPER)	
169	3-938-588-01	SPRING, COMPRESSION	
170	X-4947-242-1	SLIDER (C) ASSY	
171	X-4947-238-1	SLIDER (B) ASSY	
172	X-4947-237-1	SLIDER (A) ASSY	
173	4-982-880-01	SPRING (SLIDER A),TENSION	
* 174	4-982-863-01	GUIDE (DISC P)	

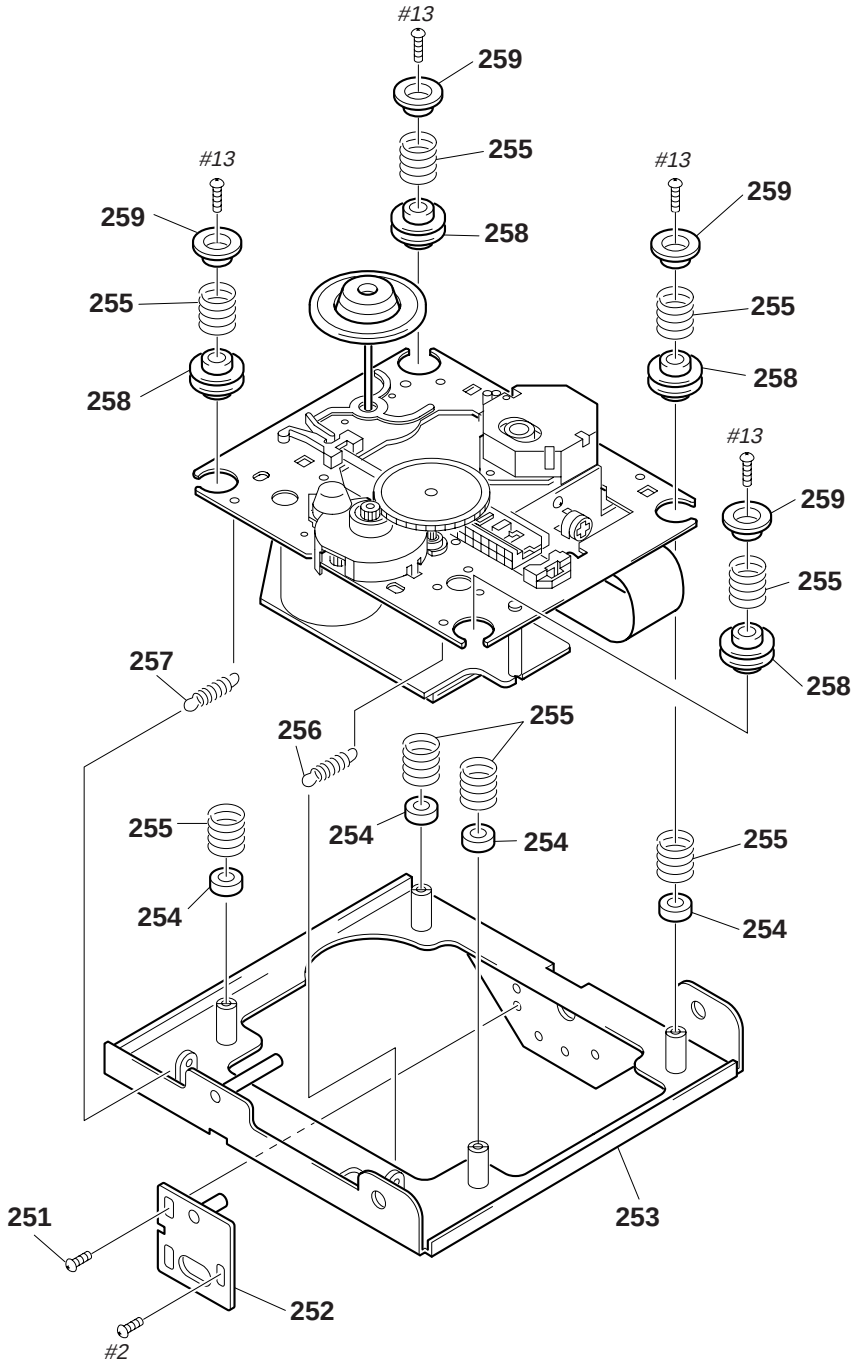
8-5. MECHANISM SECTION-2 (CDM-40)



Ref. No.	Part No.	Description	Remark
201	4-976-465-01	GEAR (LOADING 1)	
202	4-976-466-01	GEAR (LOADING 2)	
203	4-982-893-01	GEAR (CENTER 2)	
204	X-4947-607-1	GEAR (PULLEY) ASSY	
205	4-982-867-01	BELT (TIMING)	
206	3-325-697-21	WASHER	
* 207	1-661-465-11	L.MOTOR BOARD	
* 208	1-661-467-11	L.SW BOARD	
209	3-489-073-00	SCREW, THRUST	

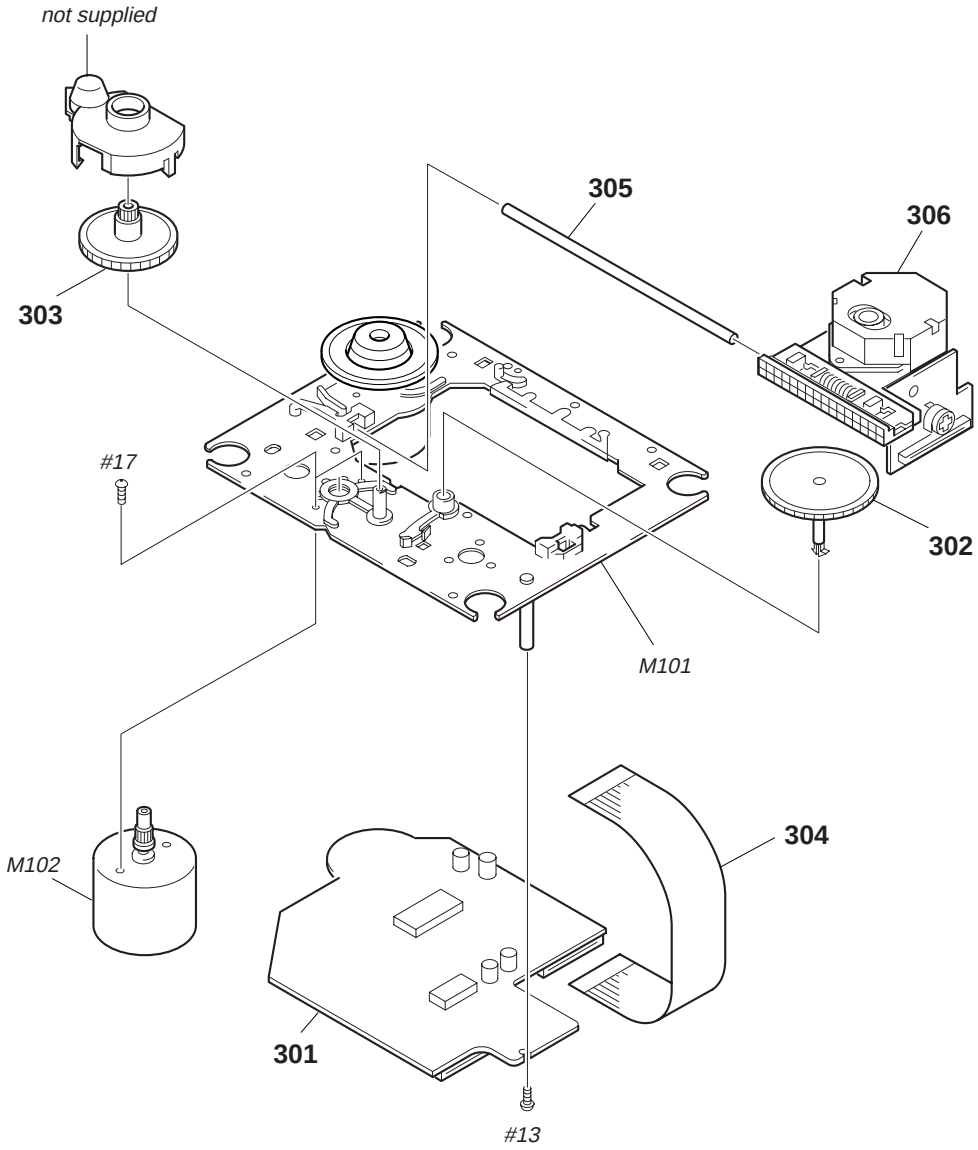
Ref. No.	Part No.	Description	Remark
210	X-4947-227-1	LEVER (STOPPER) ASSY	
211	4-951-291-01	SCREW	
212	X-4947-234-1	SLIDER (LOCK) ASSY	
213	4-982-857-01	BEARING (CAM)	
214	4-982-860-01	CAM (A)	
215	4-982-861-01	CAM (B)	
216	3-356-601-11	SCREW, STEP	
M802	A-4604-847-A	MOTOR ASSY (LOADING)	

8-6. BASE UNIT SECTION-1 (KSM-213BKN/M-N)



Ref. No.	Part No.	Description	Remark
251	3-356-601-11	SCREW, STEP	
252	X-4947-244-1	SLIDER (BU ADJUSTMENT) ASSY	
253	X-4947-243-1	HOLDER (BU) ASSY	
254	4-982-859-01	HOLDER (DAMPER)	
255	4-982-878-01	SPRING (F), COMPRESSION	
256	4-982-872-01	SPRING (F-2), TENSION	
257	4-982-871-01	SPRING (F-1), TENSION	
258	4-982-858-01	DAMPER	
259	4-960-617-01	CAP (F)	

8-7. BASE UNIT SECTION-2 (KSM-213BKN/M-N)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 301	A-4699-163-A	BD (TEXT) BOARD, COMPLET	
302	2-626-907-01	GEAR (A)(S)	
303	2-627-003-01	GEAR (B)(RP)	
304	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
305	2-626-908-01	SHAFT, SLED	

Ref. No.	Part No.	Description	Remark
⚠306	8-848-376-01	OPTICAL PICK-UP BLOCK KSS-213B/S-N	
M101	X-2626-234-1	T.T CHASSIS ASSY (MG)(K)(SPINDLE)	
M102	X-2625-769-1	MOTOR GEAR ASSY (MB)(RP)(SLED)	

SECTION 9
ELECTRICAL PARTS LIST

BD (TEXT)

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: µ , for example:
  uA...: µ A..., uPA...: µ PA..., uPB...: µ PB..., uPC...: µ PC..., uPD...: µ PD...
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H
- Abbreviation
  CND : Canadian model

Ref. No.	Part No.	Description			Remark
*	A-4699-163-A	BD (TEXT) BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C105	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C106	1-164-346-11	CERAMIC CHIP	1uF		16V
C107	1-164-346-11	CERAMIC CHIP	1uF		16V
C108	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C109	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C110	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C112	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C113	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C114	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-126-607-11	ELECT CHIP	47uF	20%	4V
C117	1-126-209-11	ELECT	100uF	20%	4V
C118	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C119	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C120	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C123	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C124	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C140	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C141	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C151	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C153	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C154	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C156	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C157	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C161	1-163-038-91	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN101	1-770-072-11	CONNECTOR,(LIF(NON-ZIF))FFC23P			
CN102	1-770-014-11	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC101	8-752-369-78	IC CXD2545Q			
IC102	8-759-176-09	IC BA6392FP			
IC103	8-752-072-45	IC CXA1821M-T6			
IC104	8-759-428-57	IC LC89170M-TLM			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R			
		< RESISTOR >			
R101	1-216-077-00	METAL CHIP	15K	5%	1/10W
R102	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R103	1-216-077-00	METAL CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-121-91	METAL GLAZE	1M	5%	1/10W
R110	1-216-025-91	METAL GLAZE	100	5%	1/10W
R112	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R125	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R126	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R127	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R131	1-216-037-00	METAL CHIP	330	5%	1/10W
R135	1-216-295-91	CONDUCTOR, CHIP (2012)			
R136	1-216-295-91	CONDUCTOR, CHIP (2012)			
R137	1-216-295-91	CONDUCTOR, CHIP (2012)			
R138	1-216-295-91	CONDUCTOR, CHIP (2012)			
R141	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R142	1-216-081-00	METAL CHIP	22K	5%	1/10W
R143	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W
R146	1-216-073-00	METAL CHIP	10K	5%	1/10W
R147	1-216-081-00	METAL CHIP	22K	5%	1/10W
R148	1-216-001-00	METAL CHIP	10	5%	1/10W
R149	1-216-003-11	METAL GLAZE	12	5%	1/10W
R158	1-216-111-91	METAL GLAZE	390K	5%	1/10W
R159	1-216-101-00	METAL CHIP	150K	5%	1/10W
R160	1-216-295-91	CONDUCTOR, CHIP (2012)			
R161	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R162	1-216-101-00	METAL CHIP	150K	5%	1/10W
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			

****

D. SENS (LUMINOUS) | D. SENS (RAY CATCHER) | DISP | DOOR SW | ILLUMINATION

Ref. No.	Part No.	Description			Remark
*	1-661-468-11	D.SENS (LUMINOUS) BOARD			
		**********			
*	4-976-473-01	HOLDER (LED-S)			
		< DIODE >			
D801	8-719-055-84	DIODE GL-528VS1			
**********					
*	1-661-469-11	D.SENS (RAY CATCHER) BOARD			
		**********			
*	4-985-300-01	HOLDER (P-T)			
		< TRANSISTOR >			
Q801	8-729-926-31	PHOTO TRANSISTOR PT483F1S			
**********					
*	A-4699-047-A	DISP BOARD, COMPLETE			
		**********			
*	4-982-811-01	HOLDER (FL)			
*	4-982-812-01	HOLDER (LED)			
		< CAPACITOR >			
C701	1-162-294-31	CERAMIC	0.001uF	10%	50V
C703	1-162-306-11	CERAMIC	0.01uF	20%	16V
C704	1-162-282-31	CERAMIC	100PF	10%	50V
C705	1-164-159-11	CERAMIC	0.1uF		50V
C706	1-124-584-00	ELECT	100uF	20%	10V
C707	1-162-288-31	CERAMIC	330PF	10%	50V
C708	1-162-288-31	CERAMIC	330PF	10%	50V
C709	1-162-288-31	CERAMIC	330PF	10%	50V
C710	1-162-288-31	CERAMIC	330PF	10%	50V
		< DIODE >			
D701	8-719-301-52	DIODE SEL2810A-C (GROUP 1)			
D702	8-719-301-52	DIODE SEL2810A-C (GROUP 2)			
D703	8-719-301-52	DIODE SEL2810A-C (GROUP 3)			
D704	8-719-301-52	DIODE SEL2810A-C (GROUP 4)			
D705	8-719-301-52	DIODE SEL2810A-C (GROUP 5)			
D706	8-719-301-52	DIODE SEL2810A-C (GROUP 6)			
D707	8-719-301-52	DIODE SEL2810A-C (GROUP 7)			
D708	8-719-301-52	DIODE SEL2810A-C (GROUP 8)			
D709	8-719-046-44	DIODE SEL5221S (POWER)			
		< FLUORESCENT INDICATOR >			
FL701	1-517-564-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC701	8-749-012-65	IC M66004M5FP			
IC702	8-759-183-47	IC M66310FP			
		< TRANSISTOR >			
Q701	8-729-900-80	TRANSISTOR DTC114ES			

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R701	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-249-417-11	CARBON	1K	5%	1/4W F
R703	1-249-409-11	CARBON	220	5%	1/4W F
R704	1-249-409-11	CARBON	220	5%	1/4W F
R705	1-249-409-11	CARBON	220	5%	1/4W F
R706	1-249-434-11	CARBON	27K	5%	1/4W
R710	1-249-415-11	CARBON	680	5%	1/4W F
R711	1-249-417-11	CARBON	1K	5%	1/4W F
R712	1-249-419-11	CARBON	1.5K	5%	1/4W F
R713	1-249-421-11	CARBON	2.2K	5%	1/4W F
R714	1-247-843-11	CARBON	3.3K	5%	1/4W
R715	1-249-427-11	CARBON	6.8K	5%	1/4W F
R716	1-249-431-11	CARBON	15K	5%	1/4W
R717	1-249-415-11	CARBON	680	5%	1/4W F
R718	1-249-417-11	CARBON	1K	5%	1/4W F
R719	1-249-419-11	CARBON	1.5K	5%	1/4W F
R720	1-249-421-11	CARBON	2.2K	5%	1/4W F
R721	1-247-843-11	CARBON	3.3K	5%	1/4W
R722	1-249-427-11	CARBON	6.8K	5%	1/4W F
R723	1-249-431-11	CARBON	15K	5%	1/4W
R724	1-249-411-11	CARBON	330	5%	1/4W
R725	1-249-411-11	CARBON	330	5%	1/4W
R726	1-249-413-11	CARBON	470	5%	1/4W F
R727	1-249-417-11	CARBON	1K	5%	1/4W F
		< SWITCH >			
S701	1-570-157-51	SWITCH, SLIDE (TIMER)			
S702	1-572-184-11	SWITCH, KEYBOARD (REPEAT)			
S703	1-572-184-11	SWITCH, KEYBOARD (PROGRAM)			
S704	1-572-184-11	SWITCH, KEYBOARD (SHUFFLE)			
S705	1-572-184-11	SWITCH, KEYBOARD (CONTINUE)			
S706	1-572-184-11	SWITCH, KEYBOARD (DISPLAY)			
S707	1-572-184-11	SWITCH, KEYBOARD (GROUP 7)			
S708	1-572-184-11	SWITCH, KEYBOARD (GROUP 8)			
S709	1-572-184-11	SWITCH, KEYBOARD (POWER)			
S710	1-572-184-11	SWITCH, KEYBOARD (GROUP 4)			
S711	1-572-184-11	SWITCH, KEYBOARD (GROUP 3)			
S712	1-572-184-11	SWITCH, KEYBOARD (GROUP 2)			
S713	1-572-184-11	SWITCH, KEYBOARD (GROUP 1)			
S714	1-572-184-11	SWITCH, KEYBOARD (GROUP 6)			
S715	1-572-184-11	SWITCH, KEYBOARD (GROUP 5)			
**********					
*	1-661-464-11	DOOR SW BOARD			
		**********			
		< SWITCH >			
S802	1-762-386-11	SWITCH, PUSH (OPEN)			
**********					
*	1-661-471-11	ILLUMINATION BOARD			
		**********			
		< CONNECTOR >			
CN810	1-506-481-11	PIN, CONNECTOR 2P			

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D802	8-719-059-65	DIODE HLMF-KL05 (INSIDE ILLUMINATION)			
D803	8-719-059-65	DIODE HLMF-KL05 (INSIDE ILLUMINATION)			
D804	8-719-059-65	DIODE HLMF-KL05 (INSIDE ILLUMINATION)			
		< RESISTOR >			
R805	1-249-407-11	CARBON	150	5%	1/4W F
R806	1-249-407-11	CARBON	150	5%	1/4W F
R807	1-249-407-11	CARBON	150	5%	1/4W F
**********					
*	A-4699-700-A	JACK BOARD, COMPLETE (CX255) ******************************			
*	A-4699-702-A	JACK BOARD, COMPLETE (CX70ES) ******************************			
*	4-962-200-01	PLATE (TR), GROUND			
		< CAPACITOR >			
C330	1-164-159-11	CERAMIC	0.1uF		50V
C331	1-164-159-11	CERAMIC	0.1uF		50V
C332	1-126-022-11	ELECT	47uF	20%	16V
C333	1-164-159-11	CERAMIC	0.1uF		50V
C442	1-162-290-31	CERAMIC	470PF	10%	50V
C542	1-162-290-31	CERAMIC	470PF	10%	50V
C901	1-161-494-00	CERAMIC	0.022uF		25V
C902	1-128-489-11	ELECT	3300uF	20%	16V
C903	1-124-360-00	ELECT	1000uF	20%	16V (CX255)
C903	1-124-689-11	ELECT	1000uF	20%	16V (CX70ES)
C904	1-126-063-11	ELECT	100uF	20%	63V
C905	1-126-851-11	ELECT	22uF	20%	35V
C906	1-126-052-11	ELECT	100uF	20%	16V
C907	1-126-101-11	ELECT	100uF	20%	16V
C908	1-124-472-11	ELECT	470uF	20%	10V
C909	1-126-163-11	ELECT	4.7uF	20%	50V
C910	1-126-163-11	ELECT	4.7uF	20%	50V
C911	1-126-163-11	ELECT	4.7uF	20%	50V
C912	1-124-472-11	ELECT	470uF	20%	10V
C913	1-164-159-11	CERAMIC	0.1uF		50V
C914	1-126-163-11	ELECT	4.7uF	20%	50V
		< CONNECTOR >			
CN901	1-770-385-11	CONNECTOR, BOARD TO BOARD 18P			
CN902	1-770-384-11	CONNECTOR, BOARD TO BOARD 16P			
CN903	1-770-383-11	CONNECTOR, BOARD TO BOARD 14P			
* CN904	1-568-951-11	PIN, CONNECTOR 2P			
CN905	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
		< DIODE >			
D330	8-719-987-63	DIODE 1N4148M			
D901	8-719-024-99	DIODE 11ES2-NTA2B			
D902	8-719-024-99	DIODE 11ES2-NTA2B			
D903	8-719-024-99	DIODE 11ES2-NTA2B			
D904	8-719-024-99	DIODE 11ES2-NTA2B			

Ref. No.	Part No.	Description			Remark
D905	8-719-024-99	DIODE 11ES2-NTA2B			
D906	8-719-109-93	DIODE RD6.2ESB2			
D907	8-719-110-72	DIODE RD30ESB2			
D908	8-719-109-85	DIODE RD5.1ES-B2			
D909	8-719-987-63	DIODE 1N4148M			
		< IC >			
IC901	8-759-330-29	IC LA5616			
IC902	8-759-821-93	IC LA5601			
IC905	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)			
		< JACK >			
* J901	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5) (S-LINK CONTROL A1)			
* J902	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5) (S-LINK CONTROL A1)			
J904	1-770-720-11	JACK, PIN 4P (AUX IN, LINE OUT)(CX255)			
J904	1-778-064-11	JACK, PIN 4P (AUX IN, LINE OUT)(CX70ES)			
		< COIL >			
L1	1-412-473-21	INDUCTOR 0uH			
L2	1-412-473-21	INDUCTOR 0uH			
L470	1-412-297-11	INDUCTOR 3.3uH			
⚠L901	1-412-915-11	COIL, LINE FILTER			
		< TRANSISTOR >			
Q330	8-729-620-05	TRANSISTOR 2SC2603-EF			
Q901	8-729-140-97	TRANSISTOR 2SB734-34			
Q903	8-729-119-76	TRANSISTOR 2SA1175-HFE			
		< RESISTOR >			
R330	1-249-429-11	CARBON	10K	5%	1/4W
R331	1-249-429-11	CARBON	10K	5%	1/4W
R332	1-249-425-11	CARBON	4.7K	5%	1/4W F
R333	1-249-429-11	CARBON	10K	5%	1/4W
R334	1-249-393-11	CARBON	10	5%	1/4W F
R451	1-249-409-11	CARBON	220	5%	1/4W F
R452	1-249-437-11	CARBON	47K	5%	1/4W
R551	1-249-409-11	CARBON	220	5%	1/4W F
R552	1-249-437-11	CARBON	47K	5%	1/4W
R903	1-249-411-11	CARBON	330	5%	1/4W
R904	1-249-425-11	CARBON	4.7K	5%	1/4W F
R905	1-249-425-11	CARBON	4.7K	5%	1/4W F
R906	1-249-435-11	CARBON	33K	5%	1/4W
		< SWITCH >			
S903	1-762-151-11	SWITCH, SLIDE (COMMAND MODE)			
		< TRANSFORMER >			
⚠T901	1-431-447-11	TRANSFORMER, POWER			
**********					
*	A-4699-046-A	JOG BOARD, COMPLETE ********************			
		< CAPACITOR >			
C601	1-124-584-00	ELECT	100uF	20%	10V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

JOG L.MOTOR L.SW MAIN

Ref. No.	Part No.	Description				Remark
		< CONNECTOR >				
* CN601	1-568-862-11	SOCKET, CONNECTOR 19P				
		< DIODE >				
D601	8-719-313-45	DIODE SEL6810A-TH10 (▮▮)				
D602	8-719-303-02	DIODE SEL2510C-D (▷)				
		< IC >				
IC601	8-759-459-84	IC NJL56H400				
		< TRANSISTOR >				
Q601	8-729-900-89	TRANSISTOR DTC144ES				
		< RESISTOR >				
R601	1-249-415-11	CARBON	680	5%	1/4W	F
R602	1-249-417-11	CARBON	1K	5%	1/4W	F
R603	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R604	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R605	1-247-843-11	CARBON	3.3K	5%	1/4W	
R606	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R607	1-249-431-11	CARBON	15K	5%	1/4W	
R608	1-249-437-11	CARBON	47K	5%	1/4W	
R609	1-249-409-11	CARBON	220	5%	1/4W	F
R610	1-249-407-11	CARBON	150	5%	1/4W	F
R611	1-247-807-31	CARBON	100	5%	1/4W	
R612	1-247-807-31	CARBON	100	5%	1/4W	
R613	1-249-417-11	CARBON	1K	5%	1/4W	F
R614	1-249-417-11	CARBON	1K	5%	1/4W	F
		< JOG >				
RE601	1-762-717-11	SWITCH, JOG (DISC/CHARACTER)				
		< SWITCH >				
S601	1-572-184-11	SWITCH, KEYBOARD (■)				
S602	1-572-184-11	SWITCH, KEYBOARD (▮▮)				
S603	1-572-184-11	SWITCH, KEYBOARD (▷)				
S604	1-572-184-11	SWITCH, KEYBOARD (⏮⏭)				
S605	1-572-184-11	SWITCH, KEYBOARD (MEMO SEARCH)				
S606	1-572-184-11	SWITCH, KEYBOARD (INPUT)				
S607	1-572-184-11	SWITCH, KEYBOARD (▷▷⏯)				
S608	1-572-184-11	SWITCH, KEYBOARD (CHECK)				
S609	1-572-184-11	SWITCH, KEYBOARD (CLEAR)				
S610	1-572-184-11	SWITCH, KEYBOARD (ENTER)				
**********						
*	1-661-465-11	L.MOTOR BOARD **********				
		< MOTOR >				
M802	A-4604-847-A	MOTOR ASSY, LOADING (LOADING)				
**********						

Ref. No.	Part No.	Description				Remark
*	1-661-467-11	L.SW BOARD **********				
		< SWITCH >				
S801	1-571-300-21	SWITCH, ROTARY (LOADING DET)				
**********						
*	A-4699-699-A	MAIN BOARD, COMPLETE (CX255) **********				
*	A-4699-701-A	MAIN BOARD, COMPLETE (CX70ES) **********				
	7-685-871-01	SCREW +BVTT 3X6 (S)				
		< CAPACITOR >				
C301	1-161-494-00	CERAMIC	0.022uF		25V	
C302	1-161-494-00	CERAMIC	0.022uF		25V	
C303	1-126-052-11	ELECT	100uF	20%	10V	
C304	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C305	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C306	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C307	1-164-159-11	CERAMIC	0.1uF		50V	
C308	1-110-489-11	CAPACITOR	1F		5.5V	
C309	1-164-159-11	CERAMIC	0.1uF		50V	
C350	1-126-022-11	ELECT	47uF	20%	16V	
C351	1-126-022-11	ELECT	47uF	20%	16V	
C352	1-164-159-11	CERAMIC	0.1uF		50V	
C353	1-164-159-11	CERAMIC	0.1uF		50V	
C354	1-136-165-00	FILM	0.1uF	5%	50V	
C355	1-136-165-00	FILM	0.1uF	5%	50V	
C356	1-164-159-11	CERAMIC	0.1uF		50V	
C357	1-164-159-11	CERAMIC	0.1uF		50V	
C371	1-126-101-11	ELECT	100uF	20%	16V	(CX70ES)
C380	1-126-023-11	ELECT	100uF	20%	25V	
C381	1-136-850-11	FILM	0.1uF	5%	63V	
C382	1-102-951-00	CERAMIC	15PF	5%	50V	
C383	1-102-961-00	CERAMIC	27PF	5%	50V	
C384	1-162-208-31	CERAMIC	24PF	5%	50V	
C385	1-162-290-31	CERAMIC	470PF	10%	50V	
C386	1-162-282-31	CERAMIC	100PF	10%	50V	
C387	1-164-159-11	CERAMIC	0.1uF		50V	
C400	1-164-159-11	CERAMIC	0.1uF		50V	
C401	1-126-023-11	ELECT	100uF	20%	25V	
C402	1-164-159-11	CERAMIC	0.1uF		50V	
C403	1-124-910-11	ELECT	47uF	20%	50V	
C404	1-130-495-00	MYLAR	0.1uF	5%	50V	
C405	1-124-721-11	ELECT	10uF	20%	50V	(CX70ES)
C405	1-126-059-11	ELECT	10uF	20%	50V	(CX255)
C406	1-130-495-00	MYLAR	0.1uF	5%	50V	
C407	1-124-721-11	ELECT	10uF	20%	50V	(CX70ES)
C407	1-126-059-11	ELECT	10uF	20%	50V	(CX255)
C408	1-102-973-00	CERAMIC	100PF	5%	50V	(CX255)

Ref. No.	Part No.	Description			Remark
C409	1-130-487-00	MYLAR	0.022uF	5%	50V (CX70ES)
C410	1-102-816-00	CERAMIC	120PF	5%	50V (CX255)
C410	1-102-973-00	CERAMIC	100PF	5%	50V (CX70ES)
C411	1-102-816-00	CERAMIC	120PF	5%	50V (CX255)
C411	1-102-973-00	CERAMIC	100PF	5%	50V (CX70ES)
C412	1-106-343-00	MYLAR	1000PF	5%	200V
C413	1-130-484-00	MYLAR	0.012uF	5%	50V
C414	1-126-233-11	ELECT	22uF	20%	50V (CX255)
C414	1-126-649-11	ELECT	22uF		(CX70ES)
C420	1-130-495-00	MYLAR	0.1uF	5%	50V (CX70ES)
C421	1-126-023-11	ELECT	100uF	20%	25V (CX70ES)
C422	1-126-059-11	ELECT	10uF	20%	50V (CX70ES)
C423	1-126-059-11	ELECT	10uF	20%	50V (CX70ES)
C424	1-126-059-11	ELECT	10uF	20%	50V (CX70ES)
C425	1-124-910-11	ELECT	47uF	20%	50V (CX70ES)
C426	1-136-802-11	FILM	0.015uF	5%	100V (CX70ES)
C427	1-136-802-11	FILM	0.015uF	5%	100V (CX70ES)
C428	1-126-059-11	ELECT	10uF	20%	50V (CX70ES)
C430	1-126-023-11	ELECT	100uF	20%	25V (CX70ES)
C431	1-130-483-00	MYLAR	0.01uF	5%	50V (CX70ES)
C432	1-130-483-00	MYLAR	0.01uF	5%	50V (CX70ES)
C434	1-164-159-11	CERAMIC	0.1uF		50V
C435	1-164-159-11	CERAMIC	0.1uF		50V
C440	1-124-724-11	ELECT	47uF	20%	50V (CX70ES)
C440	1-126-868-11	ELECT	47uF	20%	50V (CX255)
C441	1-136-802-11	FILM	0.015uF	5%	100V (CX70ES)
C500	1-164-159-11	CERAMIC	0.1uF		50V
C501	1-126-023-11	ELECT	100uF	20%	25V
C502	1-164-159-11	CERAMIC	0.1uF		50V
C503	1-124-910-11	ELECT	47uF	20%	50V
C504	1-130-495-00	MYLAR	0.1uF	5%	50V
C505	1-124-721-11	ELECT	10uF	20%	50V (CX70ES)
C505	1-126-059-11	ELECT	10uF	20%	50V (CX255)
C506	1-130-495-00	MYLAR	0.1uF	5%	50V
C507	1-124-721-11	ELECT	10uF	20%	50V (CX70ES)
C507	1-126-059-11	ELECT	10uF	20%	50V (CX255)
C508	1-102-973-00	CERAMIC	100PF	5%	50V (CX255)
C509	1-130-487-00	MYLAR	0.022uF	5%	50V (CX70ES)
C510	1-102-816-00	CERAMIC	120PF	5%	50V (CX255)
C510	1-102-973-00	CERAMIC	100PF	5%	50V (CX70ES)
C511	1-102-816-00	CERAMIC	120PF	5%	50V (CX255)
C511	1-102-973-00	CERAMIC	100PF	5%	50V (CX70ES)
C512	1-106-343-00	MYLAR	1000PF	5%	200V
C513	1-130-484-00	MYLAR	0.012uF	5%	50V
C514	1-126-233-11	ELECT	22uF	20%	50V (CX255)
C514	1-126-649-11	ELECT	22uF		(CX70ES)
C520	1-130-495-00	MYLAR	0.1uF	5%	50V (CX70ES)
C521	1-126-023-11	ELECT	100uF	20%	25V (CX70ES)
C523	1-126-059-11	ELECT	10uF	20%	50V (CX70ES)
C526	1-124-910-11	ELECT	47uF	20%	50V (CX70ES)
C527	1-136-802-11	FILM	0.015uF	5%	100V (CX70ES)
C529	1-124-910-11	ELECT	47uF	20%	50V (CX70ES)
C531	1-130-483-00	MYLAR	0.01uF	5%	50V (CX70ES)
C532	1-130-483-00	MYLAR	0.01uF	5%	50V (CX70ES)
C534	1-164-159-11	CERAMIC	0.1uF		50V
C535	1-164-159-11	CERAMIC	0.1uF		50V
C536	1-124-910-11	ELECT	47uF	20%	50V (CX70ES)
C540	1-124-724-11	ELECT	47uF	20%	50V (CX70ES)
C540	1-126-868-11	ELECT	47uF	20%	50V (CX255)
C541	1-136-802-11	FILM	0.015uF	5%	100V (CX70ES)

< CONNECTOR >

	CN301	1-770-410-11	CONNECTOR, BOARD TO BOARD 18P
	CN302	1-770-409-11	CONNECTOR, BOARD TO BOARD 16P
	CN303	1-770-408-11	CONNECTOR, BOARD TO BOARD 14P
	CN304	1-568-802-11	SOCKET, CONNECTOR 19P
*	CN305	1-568-951-11	PIN, CONNECTOR 2P
*	CN306	1-568-955-11	PIN, CONNECTOR 6P
	CN307	1-506-468-11	PIN, CONNECTOR 3P
*	CN308	1-568-839-11	SOCKET, CONNECTOR 23P
*	CN309	1-568-951-11	PIN, CONNECTOR 2P

< DIODE >

	D302	8-719-987-63	DIODE 1N4148M
	D309	8-719-987-63	DIODE 1N4148M
	D310	8-719-987-63	DIODE 1N4148M

MAIN

Ref. No.	Part No.	Description	Remark
D311	8-719-987-63	DIODE 1N4148M	
D370	8-719-987-63	DIODE 1N4148M	
D371	8-719-210-21	DIODE 11EQS04 (CX70ES)	
D372	8-719-987-63	DIODE 1N4148M	
		< GROUND TERMINAL >	
* EB603	1-537-738-21	TERMINAL, EARTH	
		< IC >	
IC301	8-752-884-85	IC CXP84332-052Q	
IC302	8-759-361-58	IC CXA8055M (CX70ES)	
IC303	8-759-370-62	IC CXD8505BQ	
IC304	8-759-463-99	IC M5M5256DFP-70XL	
IC305	8-759-822-38	IC LA6510	
IC306	8-759-604-90	IC M5F7907L (CX70ES)	
IC401	8-759-634-51	IC M5218AP (CX255)	
IC401	8-759-712-02	IC NJM2114D (CX70ES)	
IC402	8-759-602-83	IC M5238P (CX70ES)	
IC403	8-759-634-51	IC M5218AP (CX255)	
IC403	8-759-900-72	IC NE5532P (CX70ES)	
IC501	8-759-634-51	IC M5218AP (CX255)	
IC501	8-759-712-02	IC NJM2114D (CX70ES)	
IC502	8-759-602-83	IC M5238P (CX70ES)	
IC503	8-759-634-51	IC M5218AP (CX255)	
IC503	8-759-900-72	IC NE5532P (CX70ES)	
		< COIL >	
L301	1-410-322-11	INDUCTOR 3.3uH	
L302	1-410-503-11	INDUCTOR 3.3uH	
L303	1-412-473-21	INDUCTOR 0uH	
L304	1-410-507-11	INDUCTOR 6.8uH	
L305	1-412-473-21	INDUCTOR 0uH	
L306	1-412-473-21	INDUCTOR 0uH	
		< TRANSISTOR >	
Q307	8-729-900-80	TRANSISTOR DTC114ES	
Q370	8-729-900-65	TRANSISTOR DTA144ES	
Q402	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q403	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q404	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q405	8-729-900-65	TRANSISTOR DTA144ES	
Q501	8-729-900-65	TRANSISTOR DTA144ES	
Q502	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q503	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q504	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q505	8-729-900-65	TRANSISTOR DTA144ES	
		< RESISTOR >	
R301	1-247-807-31	CARBON 100 5% 1/4W	
R302	1-247-807-31	CARBON 100 5% 1/4W	
R303	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R304	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R305	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R307	1-249-429-11	CARBON 10K 5% 1/4W	
R308	1-247-807-31	CARBON 100 5% 1/4W	
R309	1-247-807-31	CARBON 100 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R310	1-249-429-11	CARBON 10K 5% 1/4W	
R311	1-249-429-11	CARBON 10K 5% 1/4W	
R312	1-249-429-11	CARBON 10K 5% 1/4W	
R313	1-249-429-11	CARBON 10K 5% 1/4W	
R314	1-249-429-11	CARBON 10K 5% 1/4W	
R315	1-249-429-11	CARBON 10K 5% 1/4W	
R316	1-249-429-11	CARBON 10K 5% 1/4W	
R317	1-249-429-11	CARBON 10K 5% 1/4W	
R319	1-249-403-11	CARBON 68 5% 1/4W	F
R320	1-249-403-11	CARBON 68 5% 1/4W	F
R321	1-249-429-11	CARBON 10K 5% 1/4W	
R322	1-249-429-11	CARBON 10K 5% 1/4W	
R323	1-249-429-11	CARBON 10K 5% 1/4W	
R324	1-249-429-11	CARBON 10K 5% 1/4W	
R350	1-247-860-11	CARBON 16K 5% 1/4W	
R351	1-249-441-11	CARBON 100K 5% 1/4W	
R352	1-249-441-11	CARBON 100K 5% 1/4W	
R353	1-247-885-00	CARBON 180K 5% 1/4W	
R354	1-247-885-00	CARBON 180K 5% 1/4W	
R355	1-247-860-11	CARBON 16K 5% 1/4W	
R356	1-247-883-00	CARBON 150K 5% 1/4W	
R357	1-247-883-00	CARBON 150K 5% 1/4W	
R358	1-249-431-11	CARBON 15K 5% 1/4W	
R359	1-249-393-11	CARBON 10 5% 1/4W	F
R360	1-249-382-11	CARBON 1.2 5% 1/6W	F
R361	1-249-382-11	CARBON 1.2 5% 1/6W	F
R362	1-249-382-11	CARBON 1.2 5% 1/6W	F
R363	1-249-382-11	CARBON 1.2 5% 1/6W	F
R364	1-249-431-11	CARBON 15K 5% 1/4W	
R365	1-249-393-11	CARBON 10 5% 1/4W	F
R370	1-249-441-11	CARBON 100K 5% 1/4W	
R372	1-249-441-11	CARBON 100K 5% 1/4W	
R373	1-249-441-11	CARBON 100K 5% 1/4W	
R374	1-249-441-11	CARBON 100K 5% 1/4W	
R382	1-247-843-11	CARBON 3.3K 5% 1/4W	
R383	1-249-417-11	CARBON 1K 5% 1/4W	F
R384	1-249-411-11	CARBON 330 5% 1/4W	
R385	1-247-895-00	CARBON 470K 5% 1/4W	
R386	1-249-417-11	CARBON 1K 5% 1/4W	F
R387	1-249-417-11	CARBON 1K 5% 1/4W	F
R388	1-249-417-11	CARBON 1K 5% 1/4W	F
R389	1-249-417-11	CARBON 1K 5% 1/4W	F
R390	1-249-417-11	CARBON 1K 5% 1/4W	F
R391	1-249-417-11	CARBON 1K 5% 1/4W	F
R392	1-249-429-11	CARBON 10K 5% 1/4W	
R393	1-249-429-11	CARBON 10K 5% 1/4W	
R405	1-215-451-00	METAL 18K 1% 1/4W	
R406	1-215-451-00	METAL 18K 1% 1/4W	
R407	1-215-451-00	METAL 18K 1% 1/4W (CX70ES)	
R407	1-215-453-00	METAL 22K 1% 1/4W (CX255)	
R408	1-215-451-00	METAL 18K 1% 1/4W (CX70ES)	
R408	1-215-453-00	METAL 22K 1% 1/4W (CX255)	
R409	1-247-830-11	CARBON 910 5% 1/4W	

Ref. No.	Part No.	Description			Remark
R410	1-249-420-11	CARBON	1.8K	5%	1/4W F
R411	1-247-895-00	CARBON	470K	5%	1/4W
R416	1-247-826-00	CARBON	620	5%	1/4W
R420	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R420	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R421	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R421	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R422	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R422	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R423	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R423	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R424	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R425	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R430	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R431	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R432	1-249-410-11	CARBON	270	5%	1/4W F (CX70ES)
R433	1-249-410-11	CARBON	270	5%	1/4W F (CX70ES)
R435	1-249-425-11	CARBON	4.7K	5%	1/4W F (CX70ES)
R440	1-249-435-11	CARBON	33K	5%	1/4W
R441	1-249-435-11	CARBON	33K	5%	1/4W
R443	1-249-435-11	CARBON	33K	5%	1/4W
R444	1-249-414-11	CARBON	560	5%	1/4W F
R445	1-247-807-31	CARBON	100	5%	1/4W
R446	1-249-425-11	CARBON	4.7K	5%	1/4W F
R447	1-249-425-11	CARBON	4.7K	5%	1/4W F
R448	1-247-807-31	CARBON	100	5%	1/4W
R449	1-249-425-11	CARBON	4.7K	5%	1/4W F
R450	1-249-435-11	CARBON	33K	5%	1/4W
R453	1-247-891-00	CARBON	330K	5%	1/4W
R505	1-215-451-00	METAL	18K	1%	1/4W
R506	1-215-451-00	METAL	18K	1%	1/4W
R507	1-215-451-00	METAL	18K	1%	1/4W (CX70ES)
R507	1-215-453-00	METAL	22K	1%	1/4W (CX255)
R508	1-215-451-00	METAL	18K	1%	1/4W (CX70ES)
R508	1-215-453-00	METAL	22K	1%	1/4W (CX255)
R509	1-247-830-11	CARBON	910	5%	1/4W
R510	1-249-420-11	CARBON	1.8K	5%	1/4W F
R511	1-247-895-00	CARBON	470K	5%	1/4W
R516	1-247-826-00	CARBON	620	5%	1/4W
R520	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R520	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R521	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R521	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R522	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R522	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R523	1-249-409-11	CARBON	220	5%	1/4W F (CX70ES)
R523	1-249-435-11	CARBON	33K	5%	1/4W (CX255)
R524	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R525	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R526	1-249-413-11	CARBON	470	5%	1/4W F (CX70ES)
R530	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R531	1-249-393-11	CARBON	10	5%	1/4W F (CX70ES)
R532	1-249-410-11	CARBON	270	5%	1/4W F (CX70ES)
R533	1-249-410-11	CARBON	270	5%	1/4W F (CX70ES)
R534	1-249-429-11	CARBON	10K	5%	1/4W (CX70ES)
R535	1-249-425-11	CARBON	4.7K	5%	1/4W F (CX70ES)
R540	1-249-435-11	CARBON	33K	5%	1/4W
R541	1-249-435-11	CARBON	33K	5%	1/4W
R543	1-249-435-11	CARBON	33K	5%	1/4W
R544	1-249-414-11	CARBON	560	5%	1/4W F
R545	1-247-807-31	CARBON	100	5%	1/4W
R546	1-249-425-11	CARBON	4.7K	5%	1/4W F
R547	1-249-425-11	CARBON	4.7K	5%	1/4W F
R548	1-247-807-31	CARBON	100	5%	1/4W
R549	1-249-425-11	CARBON	4.7K	5%	1/4W F
R550	1-249-435-11	CARBON	33K	5%	1/4W
R553	1-247-891-00	CARBON	330K	5%	1/4W
		< VARIABLE RESISTOR >			
RV301	1-230-723-11	RES, ADJ, CARBON 47K (DISC SENSOR)			
		< VIBRATOR >			
X301	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
X302	1-579-314-11	VIBRATOR, CRYSTAL (22.577MHz)			
**********					
*	1-661-466-11	T.MOTOR BOARD			
		**********			
		< MOTOR >			
M801	A-4604-847-A	MOTOR ASSY, LOADING (TABLE)			
**********					

T.SENS

Ref. No.	Part No.	Description				Remark
*	1-661-470-11	T.SENS BOARD				
		**********				
		< CONNECTOR >				
CN802	1-506-481-11	PIN, CONNECTOR 2P				
CN803	1-506-481-11	PIN, CONNECTOR 2P				
		< IC >				
IC801	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391				
IC802	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391				
IC803	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391				
		< RESISTOR >				
R801	1-249-416-11	CARBON	820	5%	1/4W	F
R802	1-249-416-11	CARBON	820	5%	1/4W	F
R803	1-249-416-11	CARBON	820	5%	1/4W	F
R804	1-249-415-11	CARBON	680	5%	1/4W	F
**********						
		MISCELLANEOUS				
		**********				
4	1-773-183-11	WIRE (FLAT TYPE) (23 CORE)				
5	1-777-345-11	WIRE (FLAT TYPE) (19 CORE)				
304	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)				
⚠306	8-848-376-01	OPTICAL PICK-UP BLOCK KSS-213B/S-N				
⚠CNP901	1-575-042-21	CORD, POWER				
FL701	1-517-564-11	INDICATOR TUBE, FLUORESCENT				
M101	X-2626-234-1	T.T CHASSIS ASSY (MG)(K)(SPINDLE)				
M102	X-2625-769-1	MOTOR GEAR ASSY (MB)(RP)(SLED)				
M801	A-4604-847-A	MOTOR ASSY (TABLE)				
M802	A-4604-847-A	MOTOR ASSY (LOADING)				
⚠T501	1-431-447-11	TRANSFORMER, POWER				
**********						
		ACCESSORIES & PACKING MATERIALS				
		**********				
	1-473-801-11	REMOTE COMMANDER (RM-DX250)				
	1-551-734-11	CORD, CONNECTION (AUDIO 158cm)				
	1-777-172-11	CORD, CONNECTION (CONTROL-A1, 1m) (CX70ES:CND/CX255:CND)				
	3-810-765-11	MANUAL,COMMONNESS INSTRUCTION (CONTROL-A1)(ENGLISH)(CX70ES:US/CX255:US)				
	3-810-765-21	MANUAL,COMMONNESS INSTRUCTION (CONTROL-A1)(ENGLISH,FRENCH,GERMAN,DUTCH,SWEDISH, ITALIAN,PORTUGUESE,CHAINESE)(CX70ES:CND/CX255:CND)				
	3-859-963-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH)				
	4-981-643-01	COVER, BATTERY (For RM-DX250)				
	4-984-086-01	BOOKLET (100)				
**********						

Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#4	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S (CX70ES)	
#5	7-685-871-09	SCREW +BVTT 3X6 (S)	
#6	7-682-947-01	SCREW +PSW 3X6	
#7	7-685-872-09	SCREW +BVTT 3X8 (S)	
#8	7-624-111-04	STOP RING 7.0, TYPE -E	
#9	7-624-106-04	STOP RING 3.0, TYPE -E	
#10	7-621-772-20	SCREW +B 2X5	
#11	7-682-552-09	SCREW +B 3X16	
#12	7-621-775-00	SCREW +B 2.6X3	
#13	7-621-772-30	SCREW +B 2X6	
#15	7-624-109-04	STOP RING 5.0, TYPE -E	
#16	7-621-775-20	SCREW +B 2.6X5	
#17	7-621-255-15	SCREW +P 2X3	
#18	7-682-547-04	SCREW +BV 3X6, S TIGHT (CX255)	
#18	7-682-547-09	SCREW +BV 3X6, S TIGHT (CX70ES)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

9-920-919-11

Sony Corporation
Home A&V Products Company

97F0924-1
Printed in Japan © 1997. 6
Published by General Engineering Dept.
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